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REVIEWS

EUPHRATES EXPEDITION.

Copy of Instructions to Colonel Chesney, &c., together with Abstracts of Correspondence, &c. Printed by Order of the House of Commons.

THAT there is a fashion in everything, is a truth which has sobered down into a common-place; and one reason why so little has resulted from the Euphrates Expedition is, that it was not the fashion. The public mind had not been duly prepared for it—the public pulse had not been stirred by the romance of the subject. It was considered and talked of as a mere commercial business—a matter of bargain between the Colonial Office and the East India Company, forced on by circumstances, and relating principally to a new mail route to India, in which the public generally were no more interested than in a new mail route to Holyhead or Newcastle. There should have been a previous awakening of the public mind on the subject; Bassora and Bagdad, Babylon the Great and Palmyra, "Susiana and Balsora's haven," the ten thousand Greeks and the army of Alexander, the cradle of the world and the early seat of Christianity, should have been rung in the public ear, until they were familiar as household words!—The camels, too, "the ships of the desert," and the wild Bedouin, skulking behind the tamarisk, or picturesquely grouped under the date tree, were objects that should have figured in the landscape, and would have had their influences. It was in this way that public attention was roused to the great Polar expeditions; and though year after year, and thousands upon thousands were expended, merely to solve a geographical problem, nobody complained; so far from it, although the object never was accomplished, nobody would complain if another expedition were fitted out to-morrow. It is more than probable, that the survey of that ice-bound coast has cost from fifteen to twenty thousand pounds a mile, and no possible compensating benefit could result from it; while the survey of the Euphrates, which was connected with such vast commercial and other interest, and would not cost more per five hundred miles, was a doomed affair from its outset. We read, in the very instructions given—

"It will be Colonel Chesney's first duty to use every exertion to secure the success of the expedition in the shortest possible time. * *

"You have already been informed, that His Majesty's Government cannot apply to Parliament for any grant in addition to that of 20,000*l.*, which has been so liberally made, for the purpose of ascertaining the practicability of navigating the Euphrates. You will always bear in mind that that is the one object of your expedition, and that scientific inquiries, however interesting, are not to be allowed to detain you."

The plain English of which is this: Circumstances have forced on us the necessity of doing something; a Committee of the House of Commons has recommended a parliamentary grant to cover the expenses of an experimental expedition; you therefore will proceed accordingly; but remember "the one object,"—do not waste a moment upon "scientific inquiries, however interesting," but get on as fast as possible to Bassora, and then—"go hang, go hang,"—or, in more courteous phrase, put yourself in immediate communication with the Bombay government, for then we have done with you.

In this spirit the expedition appears to have been sent forth. It was unfortunate at starting; it was delayed at Liverpool beyond the time anticipated, for that town, it appeared, did not afford those facilities of outfit which had been, and might reasonably have been, anticipated. It was again, and most cruelly, delayed on its arrival in Syria, by the suspicions or the policy of Mehemet Ali;† and it was only by such personal exertions as caused, in some instances, a positive sacrifice of life, and dangerous illness to all, that, after eleven months of intolerable labour, the little band were enabled to get their vessels afloat on the river. The most interesting letters are those written during this period by Sir John Hobhouse, and which are full of unaffected sympathy for the sufferings of all; at the same time, Sir John generally concludes with a pretty intelligible hint about the money. The additional outlay, it was obvious, and is admitted, had arisen from circumstances over which the parties had no control, and which could have no reference to the ordinary or average expenses of the line of route. Yet the point insisted on is not the general benefits to be derived from the expedition, but the *one* object—get to Bassora—get it over. Something, however, and of interest too, was performed, during this unexpected delay, by such of the officers as could be spared from the tremendous labours of transporting the steam-vessels and stores to the Euphrates; and the nature and extent of those labours may be inferred, from the facts, that the boilers were actually moved up hills, inch by inch by jack-screws, and the diving-bell had to be rolled under water, by means of long poles, for more than half a mile. Yet, during their detention here, the observatory was erected, and many astronomical observations made; the sites of ancient and famous cities were visited; the coast of Lataquia (Laodicea) was surveyed; excursions were made to Mount Cassius (Gebel Acra):—

"The results given by the barometer, which was observed at various heights, compared with a register kept at the same time by Mr. Eden in the depôt, coincided closely with those obtained trigonometrically by Lieutenant Murphy, and which gave for the elevation above the sea 5,318 feet; but this mountain, notwithstanding its great height, is entirely composed of supracretaceous limestones, characterized by cones and cerithie. At its north-eastern foot is an extensive deposit of highly crystalline gypsum, and, to the south-east, diallage rocks and serpentines break through the same formations, accompanied by lacustrine marls and siliceous limestones.

"On the 29th April a party, consisting of Lieutenant Murphy, Mr. Ainsworth, and Mr. Thompson, left the Orontes in a country boat to commence the survey of the Gulf of Scanderoon and its neighbouring shores. The first points visited were Arsoos and Rhosus; an ascent was then made to Gebel Kaiserick, on which they bivouacked. Next came Scanderoon, and in its neighbourhood Jacob's Well, the site of Myriandros; to the south the pass of Bylan, gates of Syria (Ptolemy), Amanian gates (Strabo), a defile in the mountains separating the Amanus from the Rhosus, and leading from Myriandos into the plain of Antioch or Umk. In the north, the remains of a marble gateway, commonly called Jonas' Pillars; (Cilician Gates of Ptolemy, L. Curtius and Arrian): this was the midnight halt of Alexander. The description of Zenophon refers to a narrow place contiguous to the seas, that of Arrian to the ascent to the hills that shut up the same plain contiguous to the sea. The latter applies itself distinctly to these ruins. Half a mile north of the Cicilian Gates is the river Merketsaye (Kersus), and beyond a wall terminating in the sea, with a tower at the foot of the mountains; the Kersus passes between two walls near the village of Merkets. This is the wall and gates of Zenophon; they are built of stone. Farther north is Bayas (Baiæ-Anton Itin) Myriandros of Williams's Geography of Ancient Asia; and there are several populous villages between Bayas and the Issus (Pinarus). At a subsequent period, in company with Colonel Chesney, this river was examined in detail, and also the ruins of a considerable town near some hills which enclose the Issic plain to the north-west, the Giaour Dagh or Amanus being east (pass of Darius, Amanian gates of Arrian), the whole corresponding closely with the latter historian's description. Where the gulf runs to the west there are ruins of forts, castles, and gateways: From thence, proceeding north-west by Kurd Kulac (Wolf's Ears, Tardequiea of D'Anville and Rennell) to Missis (Mesis), at a pass through low hills of sandstone, are the remains of a road and archway, constructed in part of sandstone, but chiefly of polygonal masses of basalt and lava, which no doubt have given rise to its name, Demir Kapou (Iron Gate), and Kara Kapou (Black Gate), the Armenian gates of Ptolemy, Ammanicæ (Pylæ of Colonel Leake), Upper Armenian gates (Rennell), Timour Kapou, or the Gate of Tamerlane (Mecca Itinerary of the Geographical Society of Paris). From hence the party visited Ayas (Agae), the mouths of the Jihoun (Pyramus), where an interesting examination took place of the progress of alluvial deposits. The most westerly point reached was Karadash, the site of Mallus and Megarsus. The whole of the party being sick, the pass of Bylan was the only position examined on the return to Antioch."

The course of the Orontes, the lakes of Antioch, and the Karasoo, were examined—researches were also made at the ruins of Seleucia Pieria—Balbec and Lebanon were visited—a line of levels was taken from the Mediterranean to the Euphrates, which determined, that the bed of the river is 628 feet above the level of that sea—a scientific excursion was made to Mount Taurus.

"The party proceeded by Aintab to Killis, and thence to the eastern acclivities of the Amanus, in the parallel of the Issus, but no passage could be effected at that season of the year. Repelled to the south, the mountains were passed by Pagra, through the Bielan pass, to Scanderoon, from whence the party proceeded by the Cilician gates and Bayas to the plain of the Issus, sufficient time having been devoted to the examination of the various questions of historical geography connected with this most interesting district; the great road towards Constantinople was followed by Demir Kapou and Koord Kulac, 'the Wolf's Ear,' Tardequiea, and by the plain of Tchokour Ova, 'the Valley of the Ditch,' crossing the Jibl Elnour, 'the Mountain of Light,' bearing on its rocky summit to the north Shah Meran, 'the Castle of the Serpent,' and along the left bank of the Jihoun Djehan Sou, 'the River of the World,' to Missis, the ancient Mopsuestia, now almost in ruins, but once, like Tarsus, one of the chief cities of Cilicia. From Missis the party continued across the plain by Adana (head quarters of the Pachalic) to the last-mentioned town, where they found the French consul, Mons. Gilet, engaged

† See Athenæum, Nos. 401, 412, 413, 427, and many others, but especially No. 413, which contains a highly-interesting account of a visit to the little camp at Amelia depôt.

in excavating a monument close to the place, of great solidity, and apparently very remote antiquity. * *

"The road followed on leaving Tarsus led over the sub-alpine country at the foot of the Taurus, consisting of tertiary rocks in great variety near the centre of the Tauric chain. The lead mines of Kule Boghaz were visited; they occur in limestones belonging to the cretaceous series, and are in the valley south of the grand pass of the same name, but worked most injudiciously. The pass itself was then examined almost to the summit level, and the party regained the more level country on the south side of the Great Mountains in order to visit the town of Sis, and the border territories of the Sultan and Pacha; here the inhabitants have so bad a name, that no muleteer or guide could be induced to proceed along the mountains in that direction; and whilst overcoming the difficulties made by the alarms of the people, Colonel Chesney and Mr. Ainsworth were separated from the rest of the party, and made their way to Sis on foot by one line, directed by the compass alone; whilst Lieutenant Murphy and Mr. Staunton reached it by another; each traversing a romantic and beautiful country formed by the wooded abutments of the Taurus, and well peopled by the best-disposed peasants imaginable, instead of being all robbers as they were represented."

They now crossed the Seihoon Jeehoon, and several smaller rivers, to Sis, made incursions into the Taurus, visited the ruins of Anarsaba, crossed the plain of Kars, and entered the mountainous country which led to Marash.

"The chain was not crossed without much difficulty; the narrow pathway was carried alongside and down precipices that were very steep, so much so, that it became necessary several times to unload the horses and carry the baggage over the most dangerous places, on one of which a horse was hurled downwards until brought up by a tree. * * Colonel Chesney returned to Port William from Marash, leaving directions for the remainder of the party to proceed in the direction of Samsat, Orfa, &c.; but being thrown back on Romkala by the swollen rivers, they returned to Port William, surveying the river between those places. During the whole period of their progress the positions of the principal places, ancient and modern, were determined astronomically by Lieutenant Murphy, and careful itineraries kept in addition to bearings, taken, when practicable, with the theodolite or Kater's compass, according to circumstances. The result of these labours has been, n the first place, to connect the surveys of the coast of Lataquia and the Issus with those of Captain Beaufort; and in the second, to go in these surveys to the Euphrates. There are ample materials for laying down a map with such a degree of accuracy, as it is hoped will enable the learned to determine many points of ancient history and geography, especially those depending upon the length of the stadium, the parasang and other scales of measurement used by Strabo, Pliny and Herodotus.

"On the day following the return of the first party another was sent out by the commanding officer to finish that part of the plan which had been interrupted. This one consisted of Lieutenant Lynch, Mr .Eden, R.N., and Mr. Ainsworth. Agreeably to the instructions received, the party took up the former work at Romkala, proceeding from thence along the left bank, carefully surveying the river as far as Samsat, the birth-place of Lucian. The ruins of this celebrated place are just recognisable; the modern town small and poor, but the valley itself fertile as it is described to have been in former times, and ferry boats are still kept up to pass the river to and from Orfa. The course of the Euphrates from this ancient Zeugma to that above Bir, differs from what has been represented on most maps; it flows, in fact, in the general direction of south-west, and is not turned, as an incorrect reading of Strabo would infer (Rennell and D'Anville), to the south-east."

A survey of the Euphrates was also made as high up as Bir, and many other interesting and important objects attended to.

We do not intend, by what we have said, to throw any—the slightest censure on the government, or on Lord Ellenborough, or Sir John Hobhouse. We desire only to submit for public consideration, that when an expedition of this nature has been determined on, the conduct and management should be left, without consideration of time or expense, to the officers in charge; such officers being always responsible (and a heavy responsibility is theirs,) to government, parliament, and public opinion. It is, we admit, right in the first instance to have an estimate both of cost and time; but this cannot be calculated to a penny or an hour, like the mail to York, or posting to Doncaster. It is not wise to bind the parties, as by a contract, and, because difficulties arise, which have nothing to do with the question at issue, to stop short in mid-career. Yet this was the substance of the instructions issued, and of all subsequent comments; "the one object" of Lord Ellenborough is thus elucidated, and enforced in a letter from Sir John Hobhouse, dated the 31st of March:—

"In consequence (Sir John observes,) of the large additional outlay to which you have been compelled by unforeseen circumstances to resort, His Majesty's Government feel that they would not be justified in continuing the experiment beyond the end of next July. * *

"Under these circumstances, I am obliged, however unwillingly, to direct that you take such measures as may be practicable to terminate the expedition by the time I have already mentioned, namely, the 31st of next July. If the steam vessels under your command should arrive at Bassora so early as to convince you that you may be able to reascend the river to Bir, and return to the Persian Gulf within the stipulated period, (of the practicability of which effort I have not, of course, the slightest means of judging,) you will I am persuaded make that attempt. If, on the other hand, there should be no chance of accomplishing that design, you will proceed at once to Bassora on your voyage to Bombay, in order to transfer the steamers to the authorities, according to a valuation to be fixed by the Governor in Council at that settlement, under instructions which have been already conveyed to his Excellency for that purpose. The completion of the surveys, as well as the experiment of the upward voyage, must then be left to the discretion of the Indian government."

Letters subsequently received from Colonel Chesney, were, it appears, submitted to his late Majesty, who, except those personally engaged in it, appears to have been the only person really interested in the expedition; and on the 1st of June the Colonel had his leave extended to the 31st of January (1837).

A letter of the 19th of June thus announces, what may perhaps be considered as the accomplishment of the more immediate object of the expedition, its arrival at Bassora; and as it contains some valuable information, we shall make a few extracts from it, and from a more elaborate report subsequently received:—

"I shall not, on this occasion, do myself the honour of making anything like a lengthened report on the state of this river, which is much more favourable in all respects than I had ventured to hold out to Government, or even to hope it would prove. With one exception we have not had anything like annoyance from the Arabs, who were, on the contrary, quite ready to supply us with timber, which has been used exclusively since we left Giaber, and they received in return either money or goods in barter. The selection of common Glasgow and Manchester goods was sought with the utmost avidity, so much so that money was discontinued latterly; and it is quite clear that the merchants of England have only to send our manufactures either up or down this river to have a ready sale, and are, as far as I can see, likely to increase to such an extent as will benefit the nation; nor is it at all difficult to deal with the Arabs. Almost invariably they either sought our protection or friendship, and even in several instances tribute was offered willingly; therefore there is little reason to fear that judicious management would secure peace and quietness throughout all future voyages. * *

"I have called upon the officers to give their individual opinions without any kind of concert or reference to each other; therefore the inclosed papers will have nearly all the impartiality of oral testimony. And in order that my views may be equally unbiassed, I shall do myself the honour of placing them before you without having the most remote idea of the contents of the other documents.

"However much the opinions may vary as to details, I conclude that every man who has descended the river with his eyes open must consider the Euphrates navigable throughout the year with properized vessels, and also that there is an ample supply of fuel along the banks, of different kinds; the rest, therefore, is a mere matter of detail, to be considered by Government, in case of coming to the decision to open the river permanently.

"I found the state of things much more favourable than I had even dared to expect, throughout the whole line from Bir to Bassora, with the exception of the Lemloon Marshes; there alone the difficulties came up to my previous reports; and they are not by any means insurmountable; indeed I should expect that before many years pass of open navigation, it will be admitted, on all hands, that the great river, considering its length, is one of the most navigable in the world.

"The favourable state of our relations with the Arabs encourages me to believe that we may remove our station from Port William to the neighbourhood of Beles, which is but 45 miles from Aleppo, and actually the nearest point on the river to the Mediterranean, which change would curtail the land journey about five hours, and at once shorten the ascent and descent by 100 miles or a little more, according to the spot selected.

"From Beles to Korna the distance is but 1,053 miles, of which nearly one-half, viz. from Beles to El Oos, is a good deal more rapid than the remaining portion, from El Oos to Korna. Occasionally the current of the upper river is four miles per hour, and even more at times for a short distance; but there was no spot where this vessel did not stem the current every day with triumphant ease, even during the first rush of the sudden freshes which we met this season during the increase and decrease of the water. We had to deal with the stream in its most rapid state during May and June; throughout the other months it is much more moderate; so much so, that, taking the whole river throughout the year, I suspect it will be found that the average is something short of two miles and a half per hour; and if I am right in the calculation, a vessel possessing the same speed that this one does might reach Beles in about 140 hours steaming, deducting of course delays for fuel, and halting some of the nights.

"With a vessel drawing no more water than the Tigris was intended to do, there would not be any difficulty from rocks, shoals or any other course between the Lemloon Marshes and Beles throughout the year."

It is not necessary for us to go into an examination of the reports of the several officers, as to the practicability of the route; it will be sufficient to observe, that in main points they concur, though there is considerable difference as to the best means of overcoming particular difficulties.

An attempt was now made to ascend the river, but they were obliged to return after reaching the Lemloon Marshes, in consequence of a defect in some part of the engine, which of course could not be repaired on the spot. In furtherance of his instructions, Colonel Chesney now departed for Bombay, leaving directions to Major Estcourt to ascend, and examine the Karoon and the Tigris, with reference to commerce and mail communications; but certainly to lay up the vessel at Bagdad, by the 31st of January, or so soon as the ascent of the Tigris should have been effected, and then proceed homewards. On the 21st of January, Major Estcourt thus writes to Sir John Hobhouse:—

"In conformity with the directions so unequivocally expressed by yourself to break up on or before the 31st January, which order had also been left me by Colonel Chesney, added to other circumstances which, as detailed in my last letters, had determined me at once to prepare to execute those commands, I had discharged the chief of the crew; put the

vessel in order for laying up; paid the amount of camel hire to convey our party to Damascus, and had fixed Monday, the day after to-morrow, for marching. Such was our position when a letter from the Marine Department of Bombay informs me this evening, that it was the intention of that Government to continue the survey of this river, and maintain the equipment of the Euphrates. I have it not, however, in my power to comply.

"We cannot maintain an equipment already reduced; nor have we strength of crew capable of conducting an examination of a channel with which we are unacquainted.

"Were I to remain here idle, I should disobey your directions, and should not fulfil the wishes of the Government of India. I have, therefore, resolved to persevere in breaking up, and bringing the men to the Syrian coast; in doing so, I hope I shall have taken the part most agreeable to your wishes."

Thus ends this eventful history. The total expense would appear to have been about 43,000*l.*, from which we may deduct the value of the vessels, &c., sold to the company in India, which will, perhaps reduce it under 35,000*l.* The Report is accompanied by tables, giving a general outline of four different lines of communication between England and India: the first, by sea to Malta, Constantinople, Trebizonde, and post horses through Persia, would, it is calculated, occupy fifty-nine days from England, and sixty to England: the second, by the Rhine and Danube, across the Black Sea, and post from Trebizonde to Bushire, occupying fifty-three days from England and fifty-five to England: the third, by Suez and the Red Sea, occupying 53½ days from England, and 55½ to England. The second of these would be the cheapest, the last the dearest; and Col. Chesney is of opinion that the latter could not be maintained at a less cost than from 30 to 40,000*l.* a year. Of the fourth route by the Euphrates we shall give a few more particulars:

	From England.	To England.
Between London and Malta ..	17	17
Delay at Malta for quarantine	1	3
Between Malta and Scanderoon	6½	6½
Between Scanderoon and Beles	3½	3½
Between Beles and Mohammera, with delay	8	12
Mohammera to Bombay ..	10	10
	46	52

"One steamer is required between Bushire and Mohammera, a second in reserve, and two very small ones in the river Euphrates. This route has not been tried by a succession of voyages, nevertheless it has been well tried both in the lowest and highest seasons. It is navigable at all times, and the links certain, and the distances from one to another short. It might be maintained for twelve voyages in the year, at the loss of about 11,000*l.*, including the Mediterranean, and is cheaper than any, with the exception of the one through Germany; it can be maintained throughout the year, and would include our mercantile interests in Persia, Arabia, the Gulf, and also Turkey, with a little additional arrangement."

Kay's Works. Part I. Edinburgh, Paton; London, Smith, Elder & Co.

John Kay was, it appears, for half a century the "H.B." of Edinburgh. He was originally a barber, but, having a talent for drawing, he taught himself to etch, published a few prints, and with such success that he opened a small print shop, and made a decent living by painting miniatures, and sketching and etching the principal personages who from time to time figured in the Scottish capital. His collected works are said to include portraits, &c., of about 400 different persons, —a curious and interesting local history. On the death of his widow his various copper-plates were purchased by the present publisher, and it is now intended to re-issue the engravings in monthly numbers, illustrated by biographical and other anecdotes. The cotemporaries of John Kay seem agreed that his etchings possess the great merit of being faithful likenesses; and certainly there is so much of individuality and character manifest in all of them, that we cannot doubt the accuracy of this judgment. This first number contains, in addition to a portrait of the artist, more than twenty portraits in groups and single figures, including among those best known to a southern public, Lords Kames, Monboddo, and Gardenstone. The biographical anecdotes of such persons could not contain much of novelty, but one or two of less known and less important characters may amuse the reader. Thus we have figuring conspicuously in more than one group, The Daft Highland Laird: and this man, we are informed, was a Perthshire gentleman, a resolute Jacobite, engaged in the rebellion of 1745, in consequence of which he was confined in the Tolbooth, where he exhibited such manifest proofs of insanity that he was set at liberty.

"There was one darling wish of his heart that clung to him for many a day, which certainly it was not very easy to gratify. This was his extreme anxiety to be hanged, drawn, and quartered, as a rebel partisan of the house of Stuart, and a sworn and deadly foe to the reigning dynasty. He was sadly annoyed that nobody would put him in jail as a traitor, or attempt to bring him to trial. It would have been a partial alleviation of his grief, if he could have got any benevolent person to have accused him of treason. It was in vain that he drank healths to the Pretender—in vain that he bawled treason in the streets; there was not one who would lend a helping-hand to procure him the enjoyment of its pains and penalties."

The Laird had sense enough to feel that the liberty he enjoyed was not consistent with his character of political martyr; and as nobody would apprehend him for high treason, he positively refused to pay his landlady, and thus accomplished his purpose of getting imprisoned by inducing her to have him arrested. Having thus got into jail, says the writer, it was no easy matter to get him out again:—

"No entreaties would prevail upon him to quit it, even after the debt for which he was imprisoned was paid. There he insisted on remaining until he should be regularly brought to trial for high treason. At last a stratagem was resorted to, to induce him to remove. One morning two soldiers of the Town-Guard appeared in his apartment in the prison, and informed him that they had come to escort him to the Justiciary Court, where the Judges were assembled, and waiting for his presence, that they might proceed with his trial for high treason. Overjoyed with the delightful intelligence, the Laird instantly accompanied the soldiers down stairs, when the latter having got him fairly outside of the jail, locked the door to prevent his re-entering, and deliberately walked off, leaving the amazed and disappointed candidate for a halter, to reflect on the slippery trick that had just been played him."

We have also a portrait and anecdotes of one James Duff, another daft creature, who was in his time well known in the streets of Edinburgh. There is something touching in the affectionate kindness of this poor idiot for his mother:—

"He was the child of a poor widow who dwelt in the Cowgate, and was chiefly indebted for subsistence to the charity of those who were amused by his odd but harmless manners. This poor creature had a passion for attending funerals, and no solemnity of that kind could take place in the city without being graced by his presence. He usually took his place in front of the *saulies* or ushers, or, if they were wanting, at the head of the ordinary company.—To Jamie himself, it must be allowed, it was as serious a matter as to any of the parties more immediately concerned. He was most scrupulous both as to costume and countenance, never appearing without crape, cravat, and weepers, and a look of downcast woe in the highest degree edifying. It is true the weepers were but of paper, and the cravat, as well as the general attire, in no very fair condition. * *

"By keeping a sharp look-out after prospective funerals, Jamie succeeded in securing nearly all the enjoyment which the mortality of the city was capable of affording. It nevertheless chanced that one of some consequence escaped his vigilance. He was standing at the well drawing water, when, lo! a funeral procession, and a very stately one, appeared. What was to be done? He was wholly unprepared: he had neither crape nor weepers, and there was now no time to assume them; and moreover, and worse than all this, he was encumbered with a pair of '*stoups!*' It was a trying case; but Jamie's enthusiasm in the good cause overcame all difficulties. He stepped out, took his usual place in advance of the company, stoups and all, and, with one of these graceful appendages in each hand, moved on as chief usher of the procession. The funeral party did not proceed in the direction of any of the usual places of interment. It took quite a contrary direction. It left the town: this was odd! It held on its way: odder still! Mile after mile passed away, and still there was no appearance of a consummation. On and on the procession went, but Jamie, however surprised he might be at the unusual circumstance, manfully kept his post, and with indefatigable perseverance continued to lead on. In short, the procession never halted till it reached the seaside at Queensferry, a distance of about nine miles, where the party composing it embarked, coffin and all, leaving the poor fool on the shore, gazing after them with a most ludicrous stare of disappointment and amazement. Such a thing had never occurred to him before in the whole course of his experience.

"Jamie's attendance at funerals, however, though unquestionably proceeding from a pure and disinterested passion for such ceremonies, was also a source of considerable emolument to him, as his spontaneous services were as regularly paid for as those of the hired officials; a douceur of a shilling, or half-a-crown being generally given on such occasions. * *

"It may not be without interest to know that this poor innocent manifested much filial affection. To his mother he was ever kind and attentive, and so anxious for her comfort, that he would consume none of the edibles he collected, till he had carried them home, and allowed her an opportunity of partaking of them. So rigid was he in his adherence to this laudable rule, that he made no distinction between solids and fluids, but insisted on having all deposited in his pocket.

"At one period he conceived a great aversion to silver money, from a fear of being enlisted; and in order to make sure of escaping this danger, having no thirst whatever for military glory, he steadily refused all silver coin; when his mother, discovering that his excessive caution in this matter had a serious effect on their casual income, got his nephew, a boy, to accompany him in the character of receiver-general and purse-bearer; and by the institution of this officer, the difficulty was got over, and the Bailie relieved from all apprehension of enlistment."

But enough, perhaps, of these illustrious obscures: and with one or two anecdotes of other persons who figure in the work we shall conclude.

Mr. Arnot, an advocate of some literary as well as legal fame, was once called on by a lady not remarkable either for youth, beauty, or good temper, for his advice as to the best method of getting rid of the importunities of a rejected admirer:—

"'Ye maun ken, Sir,' said the lady, 'that I am a namesake o' your ain. I am the chief o' the Arnots, and ye maun just advise me what I ought to do with this impertinent fellow?'

"'Oh, marry him by all means! It's the only way to get quit of his importunities.'

"'I would see him hanged first!' replied the lady, with emphatic indignation.

"'Nay, Madam,' rejoined Mr. Arnot; 'marry him directly, as I said before, and, by the lord Harry, he'll soon hang himself!'"

"Lord Monboddo, during one of his visits to London (May 1785), was present in the King's Bench, when, owing to a false rumour that the court-room was falling, the judges, and lawyers, and visitors, made a rush to get out. His lordship took it very coolly, as the following anecdote, extracted from one of the journals of the day, evinces:—In the curious *route* of the *lawyers' corps*, it is singular that the only

person who kept his seat was a venerable stranger. Old Lord Monboddo, one of the Scots judges, was in the Court of King's Bench, and being short-sighted, and rather dull in his hearing, he sat still during the tumult, and did not move from his place. Afterwards being asked why he did not bestir himself to avoid the ruin, he coolly answered—'that he thought it was an *annual ceremony*, with which, as an *alien* to our *laws*, he had nothing to do!'"

The Old Commodore. By the Author of 'Rattlin the Reefer.' 3 vols. Bentley.

We have acknowledged heretofore that we are weary of these sea-novels;—still, as they have superseded a worse race, the fashionable novels, spawned when Fiction was in its dandy-hood; and as we do not wield a despotic sceptre—our yea or nay not being conclusive as to which books shall or shall not be published—we will screw our courage to the sticking place, and welcome 'The Old Commodore,' (the identical "angry old gentleman" of the sea-song,) with as much heartiness as remains with us.

The tale opens with the Old Commodore, Sir Octavius Bacuissart, sick on shore and sick of shore;

> the bullets and the gout
> Have knocked his hull about,

and an occasional twinge of conscience has not tended to improve his temper. He has been a notable tyrant in his day, and, among other of his "absolute shalls," he compelled the son of a widowed sister to go to sea with him against her wish, and drove the lad, a high-spirited noble youth, to desperation, by threatening, in a fit of passion, to flog him; whereupon the nephew, preferring the deep sea to dishonour, jumped overboard.

On hearing this news, his bereaved sister partially lost her senses, and was accustomed ever after to haunt his house in the ostentatious paraphernalia of sorrow—a ghastly visitant—for the purpose of demanding her son at his hands. No wonder the Old Commodore, superseded, too, in consequence of the transaction, is testy and unmanageable. He is thoroughly ruled, however, by his daughter Rebecca, (familiarly called *for short* Becky Backy,) a damsel endowed with high spirits, a temper a trifle vixenish, a warm true heart, and great personal beauty of course. These are the working characters of the tale; and when we have added that the Old Commodore, early in the second volume, gets employed once again; that, in the course of his cruise, his conscience becomes lightened of its burden; and that the story ends with the happiness of all the "high contracting parties," we have told as much of the plot as need be. Neither shall we dwell upon the manner in which it is conducted, further than to observe, that the author is too fond of digressions, and of playing off his drolls and bores to a somewhat fatiguing length. But these sea-novels do not come within the pale of legitimate criticism; it will be, therefore, more to the purpose to give a specimen, than to waste time and words in analysis and protest.

The ship has now been long at sea, the crew were on short allowance, and somewhat inclined to mutiny.

"Fresh beef and vegetables were now things only to be thought of with the agony of hope. A sort of mirage of turnips, carrots, potatoes, and cabbage, were continually before the eyes, but, alas! many a weary league from their mouths. It is true, the Commodore gave the men full latitude of grumbling, only with this proviso, that if the expression of it, either by word or gesture, reached him, they should be flogged. He told them that he had not yet begun to complain, and that he fared exactly as they did—which was *almost* true—and that it was just as noble a deed to starve as to fight for one's country; and once, when twelve large, brawney, expressively hungry Jacks came aft, with three ribs of beef upon a wooden platter—and asked the Commodore respectfully, if those three bare ribs, with a piece of ruddled up salted mahogany that lined the extremities of the bones, weighing about two ounces avoirdupois, were to be served out to them for an eight-pound piece of beef—which was to support twelve fellows that day and the next, which was banyan day—the old gentleman put his one eye close to it, scrutinizing the morsel as if it had been an entomological specimen of rare genus. After this visual examination, he thrust the iron spike that he always carried at the end of his arm—when he did not screw on his fork, or his spring pincers to hold his cards at whist—into the little flesh discoverable, and holding out his arm like a steel-yard, began balancing it, as if to ascertain its monstrous littleness of weight, and that too, with a countenance full of commiseration—he was just on the point of sending for the purser, when his sharp single eye caught, ranged along the main-deck, an interminable line of hungry men with miserably filled platters, all anxiously waiting the result of the bold and piteous expostulation, ready to rush on, each with his complaint.

"The Commodore was decided in a moment. He saw, at once, that all redress was precluded by the magnitude of the evil; so he turned sternly to the complainants, and said, 'My men, you had better, to save your flesh, pick your bones yourselves. It is dangerous to sup soup with the devil, or permit your captain to pick a bone with you. I shall look over your fault this time, of being hungry, as it may be an accident when it happens to no more than twelve of you; but to any above that number it is downright mutiny.'

"The complainants walked off their bones, eyeing them most wickedly, and wishing that they possessed the teeth and the stomachs of hyænas: and the long line of expectants on the main-deck, each with his wooden platter in his hand, slunk down below, thinking himself fortunate to have escaped a scored back for his mutinous expression of hunger. * *

"But as Richard Stubbs, the captain of the mess, and the man who bore the bones, had, bones and all, nearly disappeared down the Jacob's ladder, a change came o'er the spirit of the Commodore's countenance, for he puckered up his red and knotty features into something like a grin, then again resumed his usually desperately stern look, and, at length, relaxed into a low whistle; but it was sufficiently audible for those on deck to recognise in it, distinctly, the tune of 'O the roast beef of Old England! O the Old English roast beef!'

"Richard Stubbs heard it too: and, instead of smiling at the droll coincidence, like the officers near Sir Octavius—for they were allowed to smile on the quarter-deck, though none but the Commodore and the winds were allowed to whistle on that sacred spot—Richard Stubbs, I say, shook his head mournfully over the fleshless bones of oxality, while his outstanding pigtail made solemn gyrations in the unconscious air.

"'Come here, my men,' blustered out the Commodore in his gruffest voice; 'come aft, sir, with that excellent eight-pound piece of beef, immediately. Shall I call the boatswain's mate to freshen your way?'

"So Dick Stubbs came aft, very naturally expecting three dozen at least for shaking his head at the Commodore's tune.

"'Well, sir,' said the Commodore, when the penitent Richard had taken his position on the quarter-deck, holding the unlucky beef bones in one hand, and a wiry curl that hung over his right temple in the other.

"I am no judge of music, your honour; it was the excellent eight-pound piece of beef that I was thinking on.'

"'Well, my man; and what might your thoughts be?'

"It might have been the shifting of the Commodore's quid, or it might have been a smile, but, whatever it was, it encouraged Stubbs to the unheard-of boldness to reply: 'Sir Hoct-*ive*-us'—the middle syllable duly accentuated—'my thoughts were that we might think of it for all the satisfaction we should get out of it, as we should not ever be able to dine on it.' * *

"'Did you ever hear, Richard Stubbs,' said the Commodore, 'of the 'Devil's dumplings?'

"'Lord bless your honour and his Majesty, no, sir,' said Richard, again all trembling.

"'Order the master-at-arms to send aft every third man who was going to bring his beef under my nose to-day—every third captain of the messes, I mean.' * *

"When the Commodore had them all properly toe-ing a line, he placed himself before the centre man: he cast his one ogre-eye fiercely up and down the rank, and then said sharply, 'My men, do any of you know what "Devil's dumplings" are?' * *

"Their silence was a complete manifestation of their ignorance, and the Commodore proceeded:—'My men, I have served his Majesty before most of you were born (the hat lifted as usual at "Majesty") and at a time when British seamen gloried in their hardships, and could live upon their glory, for they had very often little else to eat; but you—you are a fallen race, a set of gormandizing rascals, who are only thinking of how much living fat you can turn his sacred Majesty's, God bless him! (hat higher than usual) pork and pease into. It is of no use telling such ravenous eaters as you are, how, when I sailed in the Weasel in the Dutch war, the men were put upon an ounce of bullock's hide, taken off the main yard, per day per man, and when this failed us, we tried what kind of wood, when reduced to sawdust, would make the best substitute for flour. After several trials, we found that the hard wood we got from the Spanish main answered the purpose best; and, ever after, it was called *lignum vitæ*, or the log of life, just in the same way as we call bread of wheaten or barley meal the staff of life; and then the little round wooden wheels in our blocks began to get the name of sheaves, for really they were as sheaves of corn to us.' * *

"Now, my men, ever since I have had command of this ship and squadron, I have been like a father to you all,—and bating that I have spared the rod, I have proved myself to you a wise and indulgent parent—a little too indulgent, mayhap—allowed a little too much for lee way in my dead reckoning with you all, but I hope none of you will take advantage of my weakness. Now, for the good of his Majesty's service, God bless him, and may he never see a banyan day! (hat lifted) you have all been placed six upon four; and hot weather and long keeping will make salt pork and beef shrink like a lawyer in his shroud. I know all this, and I likewise know that ye are not like the men I sailed with in the Dutch wars; in those days four of them would eat up an ox at a meal, or live upon his hoofs for a fortnight, as the case might be, according to orders, and as was most fitting for the good of the service. Ah! there were giants in those days; and sages, too, who made their giants' strength still stronger by their wisdom; and it was those sages who taught the seamen, when provisions ran short, how to make Devil's dumplings. Now, my men, as I wish you to make the most of your rations, and as I do not think that any considerations could induce *me* to allow you to eat the hides of the yards or grind up the blocks for flour, you had better listen attentively;'—and then the Commodore, taking out of his pocket a well-thumbed volume of Roderick Random, which he generally carried about with him, holding the book in his right hand, commenced very deliberately turning over the leaves with his iron left, as if to discover the right place, and then, pretending to read, went on, with a look sour enough to pickle cabbage without vinegar, as follows: 'Page the 75th, chapter the 14th. "How to make Devil's dumplings. Let the cook of the mess take a four-and-twenty-pound shot, or a shot of any other weight, the heavier the better, and clean it well with spittle and fresh oakum."'

"Here three midshipmen burst out into indecorous laughter, and were immediately sent to the three respective mast-heads for their unmannerly interruption of the solemnity of the proceedings; and, after the Commodore had eyed them half up the rigging, he continued to appear to read,—'"And fresh oakum: then take all the bones you can get, whether of pork or of beef it matters not, and pound them into a pulp, of the consistency of damp flour. You must then return the shot to the shot-rack, and take for every handful of said pulp three handfuls of oatmeal, mix carefully with cold water, and knead all together into dough, and then tie up into dumplings of half a pound each, boil three hours in salt

water, season them with gunpowder, and serve up hot. The above dish will be found the most wholesome and savoury that you can put upon the messtable, *when no better can be procured.*"'

"'I arn't a morsel o' doubt of it, Sir Hocktiovas,' said a grim old quarter-master, one of the instructed.

"'Nor I either, nor any reasonable man,' said the Commodore, in continuation."

Having now messed with the ship's company, the reader may not object to dine with the Commodore:—

"For the first course, there was at one end of the table a soup made of the ship's pease—grey-coated gentlemen that scorned to be split, and endued with a surprising hardness of heart, considering the boiling to which they had been subjected; but this preparation was made unctuous, and consequently nutritious, by gobbets of fat and rancid salt-pork, floating amongst the impervious pease: and at the other end stood a superb tureen of lobscouse. Everybody knows what lobscouse is; it is a dish fit for the gods, and of that satisfying nature, that a spoonful is sufficient for a whole year for a mere mortal, when he can get anything else to eat.

"There were two dishes of fish in the centre: a shark had been caught the day before, and these dishes were parts of one of them—strips of the tail fried in Florence oil, and the other strips of the said tail boiled *au naturel*, as a Frenchman would say, both dishes to be grinned at if you like, but at the same time, most certainly to be eaten if you are ravenously hungry. At the very short stay of the squadron at Rio Janeiro, there had not been sufficient time to lay in any stock of vegetables whatever, therefore the Captain's cook had most judiciously not sent up any of those watery and unsubstantial aliments. He knew that neither his master nor his guests were Pythagoreans. But, though there were no vegetables, generally so named, yet there was one very excellent dish of vegetable growth, and as fresh as any nobleman could have procured it, at his lordly mansion in merry old England. It was an exquisite salad, made of mustard and cress, grown in the garden of the Commodore's stern walk. The table was, from first to last, well furnished with good wines, though Sir Octavius was never known, fond as he was of his glass, to commit, at sea, an excess in drinking.

"On the second course, the pease-soup gave place to a dish of very thin slices of fried salt pork laid upon biscuits, well soaked in fresh water, to make them soft, and then fried with sweet oil with the pork. * *

"The remove for the fish in the centre, was a solid, and noble-looking imitation of a sirloin of beef, modelled in red rock-salt; it was a deception, but a grand one, as it smoked, and a few pendules of fat hung about it. The purser tried to get a slice off it with the carving knife, but it turned the edge of the instrument; and there was an end of the matter. There is no doubt but that once it formed a component part of a living bull, that had passed a long life of gallantry to the Ios of that most gallant of all countries, the gem of the sea; but now the saltpetre had crystallized the animal fibre, and the sirloin was at present, only a little less solid than a fossil remain. * *

"The third course made its appearance: under the nose of the Commodore, smoked an ample plumduff, baked. The centre dish was a failure, being nothing better than ship's biscuit baked.—There should have been there a superb dish of twice-laid, only the rats had eaten up all the salt fish, and the Commodore and his friends had eaten up all the potatoes; but there were ample amends made for this disappointment in the noble dish of dough-boys, that fumed up odoriferously at the lower end of the table, with its accompanying rich sauce of Florence oil, cinnamon, and sugar. The Commodore peered his one eye over at them—the first lieutenant ogled with both his—the second lieutenant stared at them—the chaplain mentally blessed them—and had a great mind to do them honour, by resaying over them the grace before meat—the purser was singling out the largest—and the midshipmen had already one hand upon the sauce boat, in blissful anticipation."

Here we must conclude. It is the author's manner to spin out rather than condense. Had his scenes been less unmanageably long, we might have chosen one of action rather than of description.

Memoirs of the Life of Sir Walter Scott, Bart. Vol. V.

[Second Notice.]

The more we see of this work, the more we become convinced that public judgment is taken at a disadvantage by its piecemeal publication. There is no grappling with it, and all unity of purpose and effect is lost. Our attention is awakened—our feelings excited; we desire to follow out some great moral or philosophical developement of character, and then the volume closes, and we are left to console ourselves, as best we may, until Time, and the Row, brings round a fresh issue. The result is, that a work which ought to serve the critic as a theme for "high discourse," is necessarily treated as if it were a mere book of table-talk and gossip, and its best use is to furnish a few extracts. However, as we cannot regulate the course of publication, we must follow the necessity it imposes on us, and be content to dip here and there for an opinion or an anecdote. Scott, it appears, was consulted on the proposed establishment of the Royal Society of Literature, and thus wrote to Lord Sidmouth:—

"Whatever use can be made of my letter to stop the very ill contrived project to which it relates, will answer the purpose for which it was written. * * From more than twenty years' intercourse with the literary world, during which I have been more or less acquainted with every distinguished writer of my day, and, at the same time, an accurate student of the habits and tastes of the reading public, I am enabled to say, with a feeling next to certainty, that the plan can only end in something very unpleasant. At all events, his Majesty should get out of it; it is nonsense to say or suppose that any steps have been taken which, in such a matter, can or ought to be considered as irrevocable. The fact is, that nobody knows as yet how far the matter has gone beyond the *projet* of some well-meaning but misjudging persons, and the whole thing is asleep and forgotten so far as the public is concerned. * *

"Let men of letters fight their own way with the public, and let his Majesty, according as his own excellent taste and liberality dictate, honour with his patronage, expressed in the manner fitted to the studies and habits, those who are able to distinguish themselves, and alleviate by his bounty the distresses of such as, with acknowledged merit, may yet have been unfortunate in procuring independence. The immediate and direct favour of the Sovereign is worth the patronage of ten thousand societies."

A few other words on literature and literary men are worth extracting, from a letter addressed to Allan Cunningham. They give weight and authority to an opinion we have often heretofore advanced.

"All this freedom you will excuse, I know, on the part of one who has the truest respect for the manly independence of character which rests for its support on honest industry, instead of indulging the foolish fastidiousness formerly supposed to be essential to the poetical temperament, and which has induced some men of real talents to become coxcombs—some to become sots—some to plunge themselves into want—others into the equal miseries of dependence, merely because, forsooth, they were men of genius, and wise above the ordinary and, I say, the manly duties of human life.

I'd rather be a kitten, and cry, Mew!

than write the best poetry in the world on condition of laying aside common sense in the ordinary transactions and business of the world."

We have more than once quoted Scott's opinions on education; they are always sound and judicious.

"I do not so much approve of tasks and set hours for serious reading, as of the plan of endeavouring to give a taste for history to the youths themselves, and suffering them to gratify it in their own way, and at their own time. For this reason I would not be very scrupulous what books they began with, or whether they began at the middle or end. The knowledge which we acquire of free will and by spontaneous exertion, is like food eaten with appetite—it digests well, and benefits the system ten times more than the double cramming of an alderman. If a boy's attention can be drawn in conversation to any interesting point of history, and the book is pointed out to him where he will find the particulars conveyed in a lively manner, he reads the passage with so much pleasure that he very naturally recurs to the book at the first unoccupied moment to try if he cannot pick more amusement out of it; and when once a lad gets the spirit of information, he goes on himself with little trouble but that of selecting for him the best and most agreeable books."

Here are a few words that will not, we trust, be without their good influences.

"On coming to a broad path in the middle of the woods, we took notice of a finger-post, on which was written 'The *Rod* to Selkirk.' We made some remark about Tom's orthography, upon which Sir Walter laughed, and said that that finger-post had gained him great popularity in the neighbourhood. 'I cannot say,' he remarked, 'that I had any such view when I ordered it to be put up. The public road, it is true, is not far off, and this leads through the very centre of my grounds, but I never could bring myself to make that a reason for excluding any person who finds it agreeable or advantageous to take over the hill if he likes. But although my practice in this respect had always been well-known, the actual admission of it, the avowed establishment of it as a sort of right, by sticking up the finger-post, was received as a kind of boon, and I got a world of credit for a thing which had certainly not any popularity for its object. Nevertheless,' he continued, 'I have no scruple in saying that what I did deserved the good people's acknowledgment; and I seriously disapprove of those proprietors who act on a different principle in these matters. Nothing on earth would induce me to put up boards threatening prosecution, or cautioning one's fellow-creatures to beware of mantraps and spring-guns. I hold that all such things are not only in the highest degree offensive and hurtful to the feelings of people whom it is every way important to conciliate, but that they are also quite inefficient—and I will venture to say, that not one of my young trees has ever been cut, nor a fence trodden down, or any kind of damage done in consequence of the free access which all the world has to my place. Round the house, of course, there is a set of walks set apart and kept private for the ladies—but over all the rest of my land any one may rove as he likes. I please myself with the reflection that many people of taste may be indulging their fancies in these grounds, and I often recollect how much of Burns's inspiration was probably due to his having near him the woods of Ballochmyle to ramble through at his will when he was a ragged callant. * *

"Some one talked of the pains taken to provide the poor with receipts for making good dishes out of their ordinary messes. 'I dislike all such interference,' he said,—'all your domiciliary, kind, impertinent visits—they are all pretty much felt like insults, and do no manner of good; let people go on in their own way, in God's name. How would you like to have a nobleman coming to you to teach you how to dish up your beefsteak into a French kickshaw? And who is there so miserably put to his ways and means that will endure to have another coming to teach him how to economize and keep his accounts? Let the poor alone in their domestic habits, I pray you; protect them and treat them kindly, of course, and trust them; but let them enjoy in quiet their dish of porridge, and their potatoes and herrings, or whatever it may be—but for any sake don't torment them with your fashionable soups. And take care,' he added, 'not to give them anything gratis; except when they are under the gripe of immediate *misery*—what *they* think misery—consider it as a sin to do anything that can tend to make them lose the precious feelings of independence. For my part, I very, very rarely give anything away. Now, for instance, this pile of branches which has been thinned out this morning, is placed

here for sale for the poor people's fires, and I am perfectly certain they are more grateful to me for selling it at the price I do (which, you may be sure, is no great matter), than if I were to give them ten times the quantity for nothing. Every shilling collected in this and other similar manners, goes to a fund which pays the doctor for his attendance on them when they are sick; and this is my notion of charity."

The following is a correct version of an incident which made some talk at the time; and with it we must conclude.

"You may have seen at Somerset House an immense bronze chandelier with several hundred burners, weighing three or four tons at least. On the day previous to the public exhibition of the paintings, the Royal Academicians are in use, as your Lordship knows, to give an immensely large dinner-party to people of distinction, supposed to be patrons of the art, to literary men, to amateurs in general, and the Lord knows whom besides. I happened to be there the first time this ponderous mass of bronze was suspended. It had been cast for his Majesty, then Prince Regent, and he not much liking it—I am surprised he did not, as it is very ugly indeed—had bestowed it on the Royal Academicians. Beneath it was placed, as at Ditton, a large round table, or rather a tier of tables, rising above each other like the shelves of a dumb-waiter, and furnished with as many glasses, tumblers, decanters, and so forth, as might have set up an entire glass shop—the numbers of the company, upwards of 150 persons, requiring such a supply. Old West presided, and was supported by Jockey of Norfolk on the one side, and one of the royal Dukes on the other. We had just drunk a preliminary toast or two, when—the Lord preserve us!—a noise was heard like that which precedes an earthquake, the links of the massive chain, by which this beastly lump of bronze was suspended, began to give way, and the mass descending slowly for several inches encountered the table beneath, which was positively annihilated by the pressure, the whole glass-ware being at once destroyed. What was very odd, the chain, after this manifestation of weakness, continued to hold fast; the skilful inspected it and declared it would yield no farther—and we, I think to the credit of our courage, remained quiet and continued our sitting. Had it really given way, as the architecture of Somerset House has been in general esteemed unsubstantial, it must have broke the floor like a bomb-shell, and carried us all down to the cellars of that great national edifice."

List of New Books.—Chemistry of Nature, by Hugo Reid, 12mo. 5*s.* cl.—Fisher's Syria, Holy Land, Asia Minor, &c., 1838, 4to. 21*s.* hf-bd.—The Drawing Room Scrap-book, 1838, 4to. 21*s.* hf-bd.—The Christian Keepsake, 1838, 8vo. 15*s.* mor.—Fisher's Juvenile Scrap Book, 1838, 8vo. 8*s.* cl. gilt.—Anderson's (Rev. James) Sermons on Various Subjects, 8vo. 9*s.* 6*d.* bds.—Hone's Lives of Eminent Christians, Vol. III., 12mo. 4*s.* 6*d.* cl.—A Church of England Psalter, by the Rev. H. Parish, 32mo. 2*s.* 6*d.* cl.—An Exact Reprint of the Roman Index Expurgatorius, with Preface, by R. Gibbings, 12mo. 13*s.* 6*d.* cl.—Sillig's Dictionary of the Arts of Antiquity, translated by the Rev. H. W. Williams, 8vo. 8*s.* 6*d.* bds.—Lardner's Cabinet Cyclopædia, (History of England, Vol. VII.), fc. 6*s.* cl.—Müller's Physiology, translated by W. Baly, Part I., 8vo. 9*s.* swd.—Ryan's Philosophy of Marriage, fc. 6*s.* cl.—Combe's (Dr. Andrew) Physiology applied to Health, 6th edit. enlarged, post 8vo. 7*s.* 6*d.* bds.—Herbert's History of the Twelve Livery Companies, Vol. II., 8vo. 28*s.* bds.—Abbott's (Jacob) Works, 8vo. 12*s.* cl.—Smith's Philosophy of Health, Vol. II., 12mo. 7*s.* cl.—Goethe's Correspondence with a Child, 2 vols. 12mo. 30*s.* swd.—Keble's Visitation Sermon on Tradition, new edit. 8vo. 6*s.* cl.—Webster's Acting National Drama, Vol. I., 12mo. 7*s.* cl.—Peter Parley's Short Stories for Long Nights, sq. 2*s.* cl.—Carr's Latin Homonyms for Schools, 12mo. 3*s.* cl.—Carr's Latin Selections, fc. 3*s.* 6*d.* cl.—Cookesley's Frogs of Aristophanes, 8vo. 7*s.* bds.—Clutterbuck on Pyrexia, 8vo. 5*s.* cl.—Grainger on the Spinal Cord, 8vo. 7*s.* cl.—Celsi De Medicinâ Opera, by Dr. Steggal, 12mo. 7*s.* cl.—The Chemical Decompositions of the New London Pharmacopœia, by Dr. Steggal, 12mo. 3*s.* bds.—Cock's Operative Surgery, 8vo. 14*s.* bds.—Kramer on the Ear, translated from the German, by Bennet, 8vo. 10*s.* 6*d.* bds.—Oliver's Student's Companion to Apothecaries Hall, 32mo. 4*s.* cl.—The Edinburgh Dissector, or System of Practical Anatomy, 12mo. 9*s.* cl.—Jones's Sheridan's Dictionary, by Birken, new edit. sq. 3*s.* 6*d.* bd.—Sweet on the Law of Wills, 12mo. 4*s.* 6*d.* bds.—Stalman's Law of Copyhold Property, 8vo. 8*s.* bds.—Tidd Pratt's Magistrate's Parochial Statutes, 8vo. 6*s.* bds.—The Statutes at Large, Vol. XIV. Part 2, 7 William IV. and 1 Victoria, 4to. 13*s.* bds.—Muddock's Principles and Practice of the Court of Chancery, 3rd edit. 2 vols. 8vo. 3*l.* 13*s.* 6*d.* bds.

FOREIGN CORRESPONDENCE.

Malta, September 1, 1837.

You are, no doubt, aware of the afflicting ravages recently made here by the cholera. The island, already suffering under the extremest poverty, is thus exposed to a distress of which it is difficult to estimate the extent. The little employment that existed, already so disproportionate to the population, has ceased. The fleet is on its summer cruise; and disease and quarantine, on every side, have rendered the spacious and magnificent harbour a desert. Five or six hundred destitute orphans have been robbed of their parents, and there are no funds applicable to their maintenance or relief.

I do not intend here to make any appeal to the bounty of England, but it may, perhaps, not be uninteresting to the English public to hear something of the actual and possible resources of this small, but important and singular island, once the watch-tower and bulwark of Christendom.

The staple commodity has always been cotton. The growth and manufacture of this, particularly into sail-cloth, is said at one time to have furnished sufficient occupation to the whole poor of the island. This is not the place in which to discuss the causes of its decline: that it has declined, is certain,—and this, combined with an increase of population far beyond what the island can support, has produced intense misery. An industrious woman, spinning from morning to night, can just earn one carline a day. Some philanthropic persons, in this as in other countries, have conceived the desire that government should interpose to bolster up a manufacture which nature and the inflexible laws of trade condemn to decay. As all such attempts are necessarily abortive, it becomes desirable to turn the attention of the Maltese from illusory projects, to those which offer some chance of success.

A country so small, so poor in physical resources and in capital, and so redundant in population, can compete with other countries only in the manufacture of things which are the exclusive product of hand labour. The more elaborate the hand labour, the more advantageous the competition. Now, not only is labour in Malta extremely cheap, but the people have unquestionably a delicacy and facility of manipulation, and a readiness of imitation, which fit them in a peculiar way for certain works. The gold and silver filagree chains, &c. of Malta have long been celebrated. The Maltese also formerly excelled in marquetry, or inlaid wood. The houses of the old families still abound in cabinets, tables, commodes, &c. of this kind, many of them very handsome. The vases of Malta stone are well known in England, and are much admired, though this manufacture is susceptible of infinite improvement and extension, if a man of genius and taste presided over it. The stone is so easily worked, that the common peasants even cut vases which they sell for a few pence; and its colour, a warm creamy white, is very favourable to purposes of art. Not only is it susceptible of every variety of form, but, as it is very porous, it might be stained and painted so as to produce the most exact imitation of ancient Greek and Etruscan vases. The large vases used for gardens and terraces in Malta, will not answer the same purpose in England, because the stone will not bear the damp and frost; but they are very handsome, classical, and, at the same time, cheap ornaments for staircases, halls, landing-places, conservatories, &c.

Another application of art to the stone of Malta, is the painting it for floors or pavements. The stone, when saturated with oil, becomes hard, and takes a considerable polish. These painted floors are frequent in Malta, but are, of course, painted after the pavement is laid,—generally in a border round the room. It has, however, been suggested, that stones of two or three feet square, and a moderate thickness, might be painted for exportation, in designs taken from antique frescoes or tesselated pavements, and would form an extremely beautiful pavement for the hall or corridor of an English gentleman's house. A very meritorious artist in Malta is desirous of trying the experiment, but in this, as in everything else, want of capital, and the inability to risk anything, render it impossible for him to proceed.

This, then, is one branch of trade for which Malta enjoys, if not exclusive, yet peculiar advantages; the material, to any extent, almost for nothing, skilful labour extremely abundant, and means of transport at her door. The dexterity, and we may even say elegance and finish, with which the Maltese would execute works of art, may be judged from this:—A common peasant, from one of the casals, is now carving in the Chapel of St. Paolo, in the church of St. Giovanni, a bas relief in Malta stone of the most intricate and delicate arabesque, from the design and under the direction of Mr. Hyzler, a native artist of great merit and admirable taste. The pay of this man is half a dollar—2*s.* 1*d.* a day.

Another proof of this aptitude for difficult and delicate hand labour, is to be seen in the same church. This, as you know, was the church of the mighty and magnificent Order, and here are the ashes of the Grand Masters and Knights. The entire pavement consists of monumental inscriptions and decorations. They are executed in a gorgeous mosaic of coloured marbles, long and minute inscriptions, elaborate arabesques, figures, &c. It is rather splendid and curious, than beautiful;—but it was, at all events, a grief and a shame to see it going to destruction;—and Malta will long gratefully remember that Sir Frederick Ponsonby first set on foot the work of repair, or rather restoration. By his authority, one of the bells of St. John's Church, which was unserviceable, was sold, and with its proceeds, and those of some other bells which were scattered about the fortifications, sufficient funds were procured to complete the repair of the left wing of the church.

The present governor, Sir Henry Bouverie, has followed the laudable example of his predecessor, and has authorized the repair of the right wing out of the public funds. The whole estimated cost of this vast and elaborate work is 200*l.*, a sum which, when we consider the cost of the material, and the quantity and quality of the labour, is astonishingly small. When we consider, too, that the men whose names this splendid pavement records, were of the best blood of every nation in Europe, we cannot but think it hard that the small and suffering population of Malta should have to pay for its repair. Surely, even England, were it but to do honour to the memory of the forty-nine English knights who followed their illustrious and noble master, L'Isle Adam, from Rhodes, when he took possession of Malta in the year 1530, might afford to give the Maltese the repairs of a church which is far more of European than of insular interest.

This work also is under the direction of Mr. Hyzler, whose account of the way in which he formed his humble school of art was one of the most interesting things I remember to have heard. This magnificent and elaborate mosaic is entirely executed by common labourers working at a shilling a day, and working joyfully and gratefully. Some were destitute young men out of work; all extremely poor. By patience and encouragement they have now learned to cut and polish and inlay the smallest letters or designs with a delicacy and accuracy not to be exceeded.

I cannot help thinking that here again rich and magnificent England might turn to account the resources and skill of her subjects of Malta, while she would infuse new life into a suffering and broken-spirited people. I have little doubt that if they had any steady encouragement (for a chance customer will never create a supply), and were under the direction of an artist capable of furnishing models and designs, the Maltese would, in a short time, produce tables and other articles of ornamental furniture, which might rival in beauty and surpass in cheapness those of Italy. I have already spoken of the excellence to which they formerly attained in Tarsià, or the art of inlaying in wood. The *noce*, or walnut of Sicily, was much used as a groundwork by some of the great Italian masters of Tarsià of the fifteenth and sixteenth centuries, and from its deep rich brown, approaching to black, is admirably adapted for that purpose. This wood is common in Malta, and carvings for churches, &c. are still very well executed in it. The olive and other beautiful woods are also cheap. The art of inlaying, though greatly declined, is not lost, and it would not be difficult, were there an adequate demand, to obtain drawings of the remaining works of the great masters of Italy, Germany, and Flanders as models, and to adorn the houses of England with works requiring a degree of minute labour, which

would render them far too costly if paid at the rate of English wages. The Maltese possess one exquisite specimen of Tarsià, in the choir of their own cathedral of Città Vecchia, as a work of art unquestionably the finest, as well as the most curious thing in the island, though hitherto its existence has hardly been noticed. Very accurate and beautiful drawings of this admirable specimen of the grace and expression which the cotemporaries of Mantegna knew how to throw into figures put together of wood (*commesse di legno*) have been made by Mr. Caruana, a meritorious native artist; and I am not without hope that they may be given to the English public. I shall not therefore attempt to describe them here.

Fine and delicate works, such as lace embrodiery, &c., are extremely well and cheaply done by Maltese women; and, in this moment of utter stagnation of trade and of urgent and general distress, many families of the middle classes, such as widows and orphans of professional men, of government servants, &c., obtain a scanty subsistence by the labour of the younger female branches. If but an insignificant part of the custom of England for these articles could be transferred to Malta, it would be felt through the whole community.

In enumerating the actual or possible resources of Malta, I have chiefly had it in view to call the attention of your readers to articles of luxury which might find a sale in England; I have, therefore, not mentioned the manufacture of cigars, which now employs a great many hands, chiefly women, at extremely low wages. Nor have I spoken of the quantity of common furniture, principally chairs, which go to the Levant. These are strong and comfortable, and not ugly, and cost two dollars (*8s. 4d.*) a dozen. The wooden part is painted, generally cane colour, and the seat is a very light and pretty sort of net-work of twisted Sicilian grass. Benches, stools, sofas, &c., are made in the same way; a bench or couch, full 7 feet by 2, with strong ash or elm frame and legs, and seat of the kind described, extremely agreeable, and even pretty for a summer seat, costs at the utmost two scudi (*3s. 4d.*); a very large deep arm-chair, with the same sort of bottom and cushions stuffed with Sicilian grass, *10s.*, and so on. The Genoa chairs, so admired for their lightness, are well imitated here, and very cheap. Tables of the black walnut, of olive root, &c., are handsome and cheap. The manufacture of furniture for exportation is comparatively recent. From the increasing importance of the Levantine states something may perhaps be hoped from this.

There is one branch of the cotton manufacture which, inasmuch as it is peculiar, may, as a matter of taste, remain alive, though as a resource for the people it is nothing. You, perhaps, know the dark tawny Malta nankeen, made from the red cotton grown in the island; this, when interwoven with white, in the same way as the Germans mix brown and white hemp and flax, forms a very handsome damask. The officers of the British Navy, who are the most generous and efficient patrons of Maltese art and manufactures, frequently have sets of doyleys woven with their arms, crest, the name of their ship, or other devices.

I beg of your readers, accustomed to the gigantic productions, the boundless resources, the long and highly stimulated activity of England, not to smile at the pettiness of the objects I have placed before them; rather to think with generous compassion of a community to whom such trifles make the difference between absolute want and that state of privation, not to sink below which is the most they aspire to.

La Première Fourchette de Paris.

Paris, October 3.

M. de Cussy has just died at the age of seventy-one. No one knew Paris who did not know M. de Cussy, the first gastronome of his day, the rival of Brillat Savarin. M. de Cussy was the eldest son of the Marquis de Cussy, and was a young officer when the revolution broke out. He emigrated, and, giving himself to culinary science, explored the kitchens of England, Germany, Italy,—nay, Russia. Though a Frenchman, never was *professeur* more liberal; even so far back as 1815 he acknowledged the merits of roast beef;—nay, he was the only Frenchman I ever met generous and impartial enough to admit, that a boiled leg of mutton might be eaten by a christian gentleman. When Bonaparte became emperor, M. de Cussy returned, and, in lieu of his estate and his Marquisate, Napoleon gave him the key of Chamberlain and the title of Baron. M. de Cussy admired the great soldier, but always protested against his want of taste. So far as regarded the palate, M. de Cussy declared that Napoleon never rose above the grade of *sous-lieutenant*. The Restoration could not forgive the Marquis for having accepted the title of an Imperial Baron; and even *Louis Dix-huit*, who respected his science, was never able to overcome the prejudices of his followers in appointing, as he wished to do, M. de Cussy over the Royal *Bouche*. M. de Cussy, however, made out a place for himself, fully as lucrative and as agreeable to his nature as that of Chamberlain; he became controller of the cattle markets at Poissy and Sceaux; so that not a fat ox was sold for the capital without his knowledge and under his superintendence. But the best way to depict the man is to give you a sketch of how he passed his day. He rose just time enough to get into his cab, and trundle down to the cattle market, on the days when he was inspector. His déjeuné was something noted and remarkable. His task over, De Cussy came to town, and always sat down to that particular table, in the twelve *arrondissemens* of the capital, which happened to be laden with the best dinner. How he knew, or how he scented this out, was a marvel to all the world; but let who would give a dinner of the first class, he was sure to see De Cussy walk in; and he was, of course, always welcome. After dinner the Marquis Baron dropped in at one *soirée* or another, and then proceeded to the club; there he usually looked on, though he sometimes joined in the turns of Fortune's wheel, until day-light began to peep: others then went lazily to bed; not so De Cussy—he proceeded straight to the fish market, eyed each goodly turbot, contemplated each royal sturgeon, and marked who was the purchaser of the most delicate and most costly. Thus it was that he knew where to wend for his dinner. His friends have ordered the following epitaph to be engraved on his tomb:—

Ci-gît De Cussy,
La Première Fourchette
de Paris.

SEVENTH MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

[*From our own Correspondents.*]

Concluded from p. 730.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

FRIDAY, SEPT. 15.

Mr. Lubbock made a communication on M. Poisson's Theory of the Constitution of the Atmosphere.

He commenced, by observing, that at a late meeting of the Section, (see p. 692) M. de la Rive described a very curious phænomenon presented by Mont Blanc after sunset, which consisted in the *reappearance* of the red colour of the snow, produced by the rays of the setting sun. Mr. Lubbock said that he should now venture, with great diffidence, to submit the possibility of the following explanation.

M. Poisson considers it a necessary consequence of the laws of equilibrium of elastic fluids, that the atmosphere of the earth, at a certain height, becomes liquefied by cold.—(Traité de Mécanique, vol. 2, p. 612;* Théorie Mathématique de la Chaleur, p. 460, et Supplement, note D.)—In this way the atmosphere receives an abrupt termination, without which, indeed, it would be difficult to imagine that the planets and comets move in space devoid of considerable resistance. If the atmosphere be constituted as M. Poisson infers from analysis, it seems to me, Mr. Lubbock observed, that we might expect that the phænomenon described by M. de la Rive would take place, and that the image of the sun, reflected from the interior surface of the *liquid air*, would be reflected again to the observer, after *sunset*, by the mountain. On the other hand, it may be stated, that an observer, stationed, at sunrise or sunset, upon Mont Blanc, or in a balloon, or in any position sufficiently elevated, ought to see in the sky the reflected image of the sun; and that there is no observation of this kind upon record. If, however, this phænomenon were to take place, it might not be referred by the observer to the proper cause. A terrestrial object seen by reflection in this manner would be reversed; but it is, perhaps, not impossible, that although the internal surface of the liquid air might not reflect mountains in this manner, it might reflect so bright an object as the sun. Halos might, perhaps, always be produced by transmitted light. It might also be remarked, that the liquid heterogeneous thickness of air opposes a difficulty to the calculation of astronomical horizontal refractions by the method of mechanical quadratures, devised by the late Mr. Atkinson, and employed by him in the Transactions of the Astronomical Society, and by M. Biot in the Conn. des Temps, unless somewhat modified.

Sir David Brewster considered this theory of the atmosphere to be inconsistent with known optical facts. If the inner surface of this outer stratum of liquid or solid air could reflect light so as to give images, there was no reason whatever why the outer surface should not do the same; in which case, mock suns and other phænomena would soon manifest themselves in such profusion, and with such distinctive characters, as to have long since put the theory, if true, beyond question. But even if this theory of M. Poisson could escape the catoptrical evidence, he did not see how it could be reconciled to the known laws of refraction: at present, also, the amount of atmospheric refraction was but small; if this theory were true, it would have been very great.—Prof. Stevelly thought the very foundation of the theory unsound. It proceeded on the supposition, which was merely one introduced by analysts for their own convenience, that the atmospheric particles were unlimitedly small, and that, therefore, each stratum, however thin, being still elastic, required the superincumbent weight of a stratum still beyond it to keep it in its place: one of the untenable consequences of this was, the conclusion to which Cotes's investigations had conducted him, that the atmosphere was of an unlimited extent. But astronomy gave a decided contradiction to this conclusion. And the atomic theory of the chemists gave, he would call it, a demonstration most perfect against the fundamental analytic principle itself, of the unlimitedly small size of the aërial particles. But this was not all: Fourier had shown that the temperature of space itself was not so low as temperatures which we can artificially produce, and yet atmospheric air has never been condensed into a liquid, much less solidified, in the laboratory of the chemist, where the additional favourable condition of strong compression could be introduced in aid of the effect, whereas, in the upper regions of the atmosphere, pressure would be almost removed.—Mr. Lubbock felt confident that these difficulties had not escaped the sagacity of M. Poisson; indeed, he knew that many difficulties were examined and removed in the notes to the original essay. As to the argument from the air of the atmosphere never having been artificially condensed, he attached no weight to it, for a few years since no person would have believed that it was possible to reduce carbonic acid gas to the state of a liquid, much less a solid.—Prof. Lloyd conceived that the astronomical demonstration given by Wollaston, of the limited extent of the atmosphere, was conclusive on this subject, for it took away the very fundamental principle of the analysis of M. Poisson,—viz. that the particles of atmospheric air were unlimitedly small.—Mr. Stevelly said, that in relation to the argument from the liquefaction or solidification of carbonic acid gas, he did not think it so important as Mr. Lubbock seemed to consider. From the moment that ammonia or chlorine had been first liquefied, every chemist he ever conversed with expressed a conviction that the other gases could be condensed, by properly varying the circumstances of temperature and pressure alone; and this long before Faraday or Kemp had succeeded in producing the precise conditions required for this effect with regard to any of them. The two principal constituents of atmospheric air had not even yet been placed under the circumstances of temperature and pressure required for their liquefaction, though no person doubted that they may yet be reduced to those conditions. But it would appear that the circumstances, under which they exist at high elevations, could easily be imitated.—Sir David Brewster

* "Ainsi, pour fixer les idées, on peut se représenter une colonne atmosphérique que s'appuie sur la mer, par exemple, comme un fluide élastique terminé par deux liquides, dont l'un a une densité et une temperature ordinaire, et l'autre une température et une densité excessivement faibles."

thought that some of the difficulties would disappear, if there were any causes in operation which could give the upper portions of the atmosphere a granular structure, such as that of the granular aggregations of flint which were found in the knots of some species of bamboo; this would not reflect with the regularity of mirrors, and its refractive powers might be conceived to be such as not to interfere with the refractions of the elastic portion of the atmosphere. Sir David also showed, by reference to a large watch-glass which happened to lie on the table, how such a liquid stratum as Poisson's theory supposed would, at great obliquities of the solar rays, act as a prism, and, therefore, when the sun sunk a certain distance below the horizon, total reflection of his beams must ensue; an effect never observed.

Professor Phillips then presented a Report of the Proceedings of the Meteorological Committee during the past year. The objects proposed by the Association in the appointment of the Committee were two-fold: first, the institution of uniform experiments, for the acquisition of accurate data concerning the distribution of temperature, from the surface of the earth downward to the greatest depths attainable by human enterprise; secondly, the establishment of well-arranged observations on the varying phænomena of the atmosphere, which can be elucidated by combined exertions on one plan, and for the same object. The Committee had thought it best to employ the sum placed at their disposal on one of these objects only, so as to effect with regard to it a real advance, reserving to themselves the hope that, by a further grant, they might be enabled effectually to turn their attention to the second branch of investigation—viz. atmospheric phænomena. One hundred pounds had been granted, and seventy-two thermometers, and proper tables for being filled up, had been distributed by the Committee.

Confining himself to the principal points disclosed by the results yet received from the several observers, it appeared that the general truth of the regular augmentation of temperature was confirmed, but that, in addition, the different distribution of water, the nature of the rocks, and other causes, produced local discordances. The last of these causes appeared to the Committee of such importance, not only for the explanation of these differences, but for purposes of general reasoning in physics, that Prof. Forbes was requested to institute a complete series of continuous experiments, similar in general principle, and at corresponding depths below the surface of the ground, as those established by M. Quetelet, at Brussels, so as to determine *the rate* of communication of heat, *in one uniform mass*, from the surface downwards to the depth of 26 feet; and further, to ascertain the *differences of this rate in materials of different kinds*, by a triplicate course of observations in trap-rock, sandstone, and a uniform mass of sand.

The sun's heat was found to extend to variable depths at various places, and with many alternations of increase and diminution; and it was in general necessary to descend from one to two hundred feet before the effect of this cause disappeared: from thence downwards the evidence of an increasing temperature seemed to be quite satisfactory. At a colliery at Wigan, where the surface mean temperature was 50°, at 50 yards deep the temperature was constantly 53°; at 150 yards deep the temperature was 56°·75; at 250 yards 63°. From this set of observations, it appeared that a descent of 100 yards was accompanied by an increase of temperature of about 6°·25, or about one degree for sixteen yards; the result of the observations made in France giving one degree for about each fifteen yards of descent.

The observations established by Prof. Forbes have been regularly registered at the Botanic Garden, in Cragleith Quarry, and on the Calton Hill, from February to September 1837, and the register was laid before the meeting. Particular precautions were taken not only to provide for the safety of the instruments, but also to allow of the application of a correction for any variation which they may undergo. Moreover, the method of experimenting on local temperature, proposed by M. Pelletier, by using a thermo-multiplier, was applied by Mr. Forbes, and as far as a few observations could be relied on, the agreement of the two methods was remarkable; but Mr. Phillips thought it would be premature to state the results till they could be supported by one or more complete circles of observation.

A Report was then read on the Magnetical Survey of Great Britain, for which a Committee had been appointed, consisting of Prof. Lloyd, Prof. Phillips, Captain Ross, Major Sabine, and Mr. Fox.

Major Sabine reported the progress which had been made towards the completion of a Report on the Lines of Magnetic Dip and Intensity in England, similar to the report on the lines in Ireland contained in the volume of the Reports of the Association in 1835, and to that on the lines in Scotland contained in the volume for 1836. The observations on the lines in England are already made, in the portions of England undertaken by Professors Lloyd and Phillips, and by Mr. Fox. There yet remained some stations in the portions undertaken by Captain Ross and himself, which would be visited as soon as the present meeting was closed. The gentlemen who are thus engaged in this inquiry were desirous that their observations should be combined, and form a single Memoir, which Major Sabine had been requested to draw up. In this Memoir it was also designed to review the determinations in Ireland and Scotland, considered in conjunction with those of England, to combine them together as parts of the same magnetical survey, and to connect the British lines with corresponding determinations in the neighbouring parts of the continent of Europe. Major Sabine remarked, that the observations to be included in this Report were, at this moment, much further advanced than was the case with the observations either of the Irish or the Scotch Reports at those meetings of the Association which respectively sanctioned their publication; and he engaged, that, should it be the pleasure of the Association to direct the printing of this Report in the volume of the publications of the Association for 1837, it should be ready when the General Secretary should require it for the press.

Mr. Fox drew attention to the advantages conferred on this branch of science by Lieut. Burns. He exhibited charts drawn by him, in which the dip and variation were laid down, with extreme accuracy, in several parts of the world. He gave a curious instance of the value of a knowledge on these subjects: as the ship drew near a promontory of the Cape de Verd Islands, the action of the rocks became perceptible to this accurate observer, who was thereby warned of the neighbourhood of land. He also was frequently able to guess at the nature of the rocks at the bottom of the sea from similar indications.—Major Sabine explained, that the Report now laid before the Section related exclusively to observations made in Great Britain; hence he had not alluded to any of these subjects, nor to other general results which many members had urged him to bring forward.—Professor Phillips said, that the dip changed frequently in the course of a day; in some observations which he had made at several stations between Ryde and York, he had found the dip to vary so much as six or seven minutes in the course of the day.—Professor Christie wished to know from Major Sabine how it was possible to compare the results of the several observations made with different instruments, when it was well known that scarcely any two could be made that would give the dip precisely alike.—Major Sabine replied, that they were only considered as differential instruments; but after the observations were recorded, the relative indications of the instruments were carefully noted, at a place of which the dip and intensity had been previously taken with care.—Professor Christie said, that even the axis of the same dipping needle was found to vary at different times, and this was a fact that should be more considered than it had been. As to the gentleman (Lieut. Burns,) spoken of by Mr. Fox, if he had invented an instrument by which he could take the dip at sea, he ought to make his invention known, for nothing would be so great a boon to the mariner, as well as to the scientific inquirer, as this. He had neglected also to state how Lieut. Burns had taken the observations, and whether he took care that the ship's head should be always in the same magnetic azimuth; since, unless this precaution were taken, the observations must have been rendered useless by the local attraction of the vessel. As to the correcting plate, he considered it to be neither correct in theory, nor good in practice.—Mr. Phillips explained the mode of taking the dip, which was, by observing all round the circle in all azimuths differing by ten degrees.—Mr. Fox, in reply, said, that Lieut. Burns had been most careful, when taking his magnetical observations, always to bring the ship's head to the same azimuth.—Mr. Henwood said, that he was in possession of many observations made in the neighbourhood of the mines in Cornwall, in which the magnetic intensity was taken at various elevations, from 700 feet above the level of the sea, to 900 feet below that level.

Dr. Robinson then made some remarks on Parallax.

The observations of the late Dr. Brinkley, he observed, with an eight-feet circle, indicated a parallax of about 1″ for *α* Lyræ; but Mr. Pond, with the Greenwich mural, appeared to obtain contradictory results. His observations seemed so satisfactory, that the Royal Society considered the question as completely decided, and rewarded him with their medal. It is true, that the Society afterwards seemed to retract this opinion, by awarding the same honour to Brinkley himself; but the impression remained on the public mind. Dr. Robinson should not have noticed this, but that he observed, in some late addresses, that this opinion was sanctioned by the illustrious names of Airy and Peacock. In reducing the Greenwich observations for the nutation, he had many of *α* Lyræ, and, selecting those which were near the maxima and minima of parallax, he obtained the following values of the constant of parallax:—

Parallaxes of α Lyræ resulting from Mr. Pond's Observations.

		Parallax.	No. of Observations.
Summer	1812.5	—0.07	29
Winter	1817	—0.70	33
Winter	1819.0	—0.77	33
Summer	1819.5	—1.08	22
Winter	1820.0	+1.73	18
Winter	1822.0	—3.65	16
Winter	1827.0	—1.01	21
Summer	1827.5	+0.17	70
Winter	1828.0	—0.18	30
Summer	.5	—0.23	52
Winter	1829.0	+2.82	26
Summer	.5	+0.99	22
Winter	1830.0	—1.84	9
Summer	.5	+0.90	22
Winter	1831.0	+0.07	23
Summer	.5	+1.30	29

Combining and expressing d^2 nutation, and d prop. motion.

1812, 1818, 1822	par = −1.28 − 0.8 d^2n + 0.3 dm.		78 obs.
1819	= −0.95	−0.3	55
1827	= −0.42	−0.2	91
1828	= −0.20	−0.25	82
1829	= +1.91	−0.3	70
1830	= −0.47	−0.25	31
1831	= +0.68 + 0.05 d^2n	−0.3	52

d^2n = −0.31; dm. = +0.07, assuming Bessel's proper motion to be true.

These results obviously may give any parallax, and, therefore, as far as they go, the question must be considered as perfectly open,—or rather, they indicate that the Dublin circle has, to the present time, given consistent results, which have not been disproved.

Dr. Robinson pointed out the necessity, in such inquiries, of guarding against the errors proceeding from changes of temperature, which may occasion a diurnal change, capable, in some cases, of masking the parallax, supposing it given by the instrument. He stated, that he had examined the index correction of his own circle by observing the Pole star and δ Ursæ minoris at both culminations on the same days; and that, though the German astronomers were always attentive to detect such changes, it was not, as far as he knew, generally practised in Britain.

Sir William Hamilton bore witness, that the astronomical circle of Dublin College still continued to give the indications which led to the conclusions at which Dr. Brinkley had arrived.—Mr. Peacock said, that his information on the subject had been, of course, only indirect. It was a question, however, which he had long considered as settled; but the results of the reductions lately made by Dr. Robin-

son of the lunar nutation, as well as the testimony of Sir W. Hamilton concurring with the great name of Brinkley, all this, he conceived, did open the subject anew to the consideration of astronomers.

Sir W. Hamilton then made some observations on new applications of the Calculus of Principal Relations.

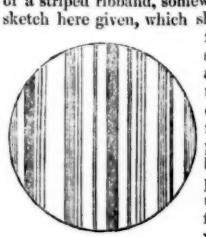
Sir William gave a sketch of some new applications which he had made, and of others which he hoped to make hereafter of his calculus of principal relations. The object of that calculus was in general to integrate the differential equations to which the calculus of variations conducts; and not, as he had been misunderstood to say at Bristol, all differential equations indiscriminately. But he intended at present to confine himself to its applications to the equations of dynamics. He reminded the Section that he had, in Edinburgh, laid before them the integrals of these differential equations deduced from his general method in such a manner, that however numerous might be the points of any system, and however complex might be the laws of their mutual attractions or repulsions, their motions could all be determined by differentiation and elimination alone, if the form of one principal function were known.

Since the present Meeting began, a paper had been put into his hands, in which the truth, as well as the novelty, of this general view was admitted by M. Poisson, who however thought that a more useful mode might be devised of applying the principle. With all the high respect which Sir W. Hamilton felt for that illustrious analyst, he was not yet convinced that it would be advantageous to alter his method in the way in which M. Poisson had proposed. Perhaps, however, he had for it the affection of a parent for his offspring. He had himself published in the Philosophical Transactions an improvement on his original process, which M. Poisson did not appear to have seen; and he had been lately engaged in endeavours to improve still farther the practical working of the method. The Committee of the Section had that morning agreed to request him to report at the next meeting of the Association how far it was practicable to apply that general method to the improvement of the lunar theory; and he would now state to the Section that upon this head he was neither sanguine nor desponding: the processes adopted by his method, when applied to the perturbations of the moon, would probably, at the outset, be more subtle and more complex than those which had been already devised by mathematicians; but it appeared to him that this inconvenience might perhaps be more than made up for at a further advanced stage of the calculations, by a property which the new method possesses of doubling at each successive approximation the accuracy already attained.

Mr. Lubbock feared that this last property might be found to be interfered with in practice by the same occurrence of small divisions which had already embarrassed former methods. He thought, for instance, that it might be useful when applied to the excentricity, but in other cases, which he particularized, he was not so sanguine; as, by advancing one step you would fall back another: on the other hand, however, he would not venture to assert that this inconvenience would arise; if it did not, the new method would be of very high practical value—indeed, almost inestimable; but, in either event, it was doubtless a brilliant conception.

Sir D. Brewster now read a notice of a new structure in the Diamond.

Sir David said, that having communicated to the Geological Society an account of certain peculiarities in the structure of the diamond, which confirm the theory of its vegetable origin, he was desirous of submitting to the consideration of this Section a new structure which he had recently detected in that gem, and which indirectly supported the same views. In consequence of the diamond having been used as the fittest substance for forming single microscopes of high power and small spherical aberration, the attention of opticians has been drawn to the imperfections of its structure. Mr. Pritchard, who first succeeded in executing lenses of diamond, put into the hands of Sir David for examination, a plano-convex lens about the 30th of an inch in diameter, which he had found unfit for the purposes of a microscope in consequence of its giving double images of minute objects. As Sir David had previously shown that almost all diamonds possessed an imperfect doubly refracting structure, as if they had been aggregated by irregular forces, compressed or kneaded together like a piece of soft gum or an indurated jelly, he had no doubt that the double images were owing to this structure, as there appeared, on an ordinary examination of the lens, to be no other cause to which it could be reasonably ascribed. This was also Mr. Pritchard's opinion, and the existence of such images prevented opticians from rashly cutting up diamonds which might turn out useless for optical purposes. As lenses of sapphire and ruby, which Sir David had long had occasion to use in very delicate microscopical observations, produced no duplication of the image, although the rays passed in directions in which the double refraction was much greater than in any specimen of diamond which he had examined, it occurred to him that the double images might arise from some other cause. He therefore proceeded to examine the light transmitted through the diamond by combining it with a concave lens of the same focal length, in order to make the rays pass in parallel directions through its substance. This experiment indicated no peculiarity of structure at all capable of producing a separation of the images, and he was therefore led to examine the plane surface of the lens by reflecting from it a narrow line of light admitted into a dark room, and examining the surface with a half-inch lens. While turning round the plane surface of the diamond, he was surprised to observe the whole of its surface covered with parallel lines or veins, some of which reflected the light more powerfully than others, so as to have the appearance of a striped ribband, somewhat resembling the rude sketch here given, which shows that the plane surface of the diamond, in a space of less than *one-thirtieth* of an inch contains many hundred veins or strata of different reflective and refractive powers, as if they had been subjected to variable pressures, or deposited under the influence of forces of aggregation of variable intensity. If, Sir David observed, the planes of these different strata had been perpendicular to the axis of the diamond lens, their difference of refractive power would produce no sensible effect injurious to the perfection of the image; but if these strata are parallel to that axis, as they are in the lens under consideration, each stratum must have a different focus, and consequently produce a series of partially overlapping images.



The results of this experiment in restoring the diamond to its value as an optical material, in so far as it enables us to cut it in a proper direction, and select proper specimens, and its connexion with some delicate researches of Professors Airy and Maccullagh on the superficial action of diamond upon polarized light, possess considerable interest, but the fact of a mineral body consisting of layers of different refractive powers, and consequently different degrees of hardness and specific gravity, is remarkable. There were several minerals, such as *Apophyllite*, *Chabasie*, and others, in which Sir David said that he had found different degrees of extraordinary refraction in different parts of the crystal; but this variation of property depends upon a secondary law of structure; and he believed that there was no crystal, either natural or artificial, in which the properties of ordinary refraction, hardness, and specific gravity, varied throughout its mass. This peculiarity of structure, therefore, might be regarded as an indication of a peculiarity of origin; and as there are various strong arguments in favour of the opinion that the diamond is a vegetable substance, the new structure which he had described might be considered as an additional argument in favour of that opinion. He had, in a former paper, placed it beyond a doubt that the diamond must have been in a soft state, like amber or gum, and capable of having its structure modified by the expansive force of air or gaseous bodies imprisoned in its cavities; and therefore the fact of its being sometimes composed of strata of different degrees of induration and refractive power, was more likely to have been produced by pressures varying during the formation of the crystal, than by any change in the intensity of the forces of aggregation of its molecules. Such a change might have been supposed probable had it been found in another crystal. He had already referred to the action which diamond exerts superficially upon light. Professors Airy and Maccullagh have found that this action is of a very peculiar kind, having some analogy with that of metallic surfaces; but it was obvious, from the preceding facts, that a surface of various refractive powers must disturb, in a very considerable degree, the phænomena produced by its superficial action. In studying, indeed, this class of phænomena, it would be necessary not only to obtain a surface of uniform structure, but to make the experiments before that surface had experienced any change from the action of the atmosphere. In surfaces of glass such changes often take place in a few days; and the thin films of oxide which are thus created, are so thin that they can only be rendered visible by examining the light reflected from the surface when it is placed in contact with an *oil* or *liquid* of the same refractive power.

The President then called on Professor Powell for the account of experiments relative to the influence of surfaces on the Radiation of Heat.

Prof. Stevelly said that Prof. Powell having been called suddenly to London, had left the paper with him to read. The following is a copy:—

The object of this communication is to call the attention of the Section to the researches of Prof. Bache of Pennsylvania, which seem not to have been so fully appreciated in this country as they deserve. That gentleman, at the outset of his inquiries, refers to a paper of Prof. Powell, in which the difficulties unavoidably attending any comparison of radiating effects of surfaces are pointed out from the impossibility of determining precisely in how many other respects besides those of colour and polish of surface, the coatings applied may not differ. In contending for the necessity of equalizing the coatings compared, in other respects, before we can estimate the effects really due to the state of the surface, he must, of course, be understood to speak under the qualification acutely referred to by Prof. Bache, dependent on the fact noticed by Leslie, that radiation takes place not only from the surface, but from a certain minute, though sensible, depth, which differs in different substances.

Taking this into account, the general meaning, as well as importance of the caution, will be manifest. In the sequel, Mr. Bache gives some very precise experimental proofs of the truth of the law just noticed, and shows, by successively adding fresh coats of the pigment, the precise limit beyond which such addition ceases to increase the radiating power—which, in fact, there comes to a maximum, and with greater thicknesses decreases.

When this point had been ascertained carefully for each pigment, their effects were observed with great accuracy, and compared with a standard surface under similar circumstances; the observations include a considerable range of substances, differing both in colour and other properties. The results exhibit no correspondence of the greatness of effect with the colour. The source of heat was hot water:—the author allows fully the distinction between properties of heat of this kind, and that connected with light: in the latter case it is evident that colour is an essential element; a wide field is yet open for tracing on what the effect does depend: and again, since Melloni has pointed out the existence of many kinds of heat, differing in their relations to screens, to trace also their different relations to surfaces.

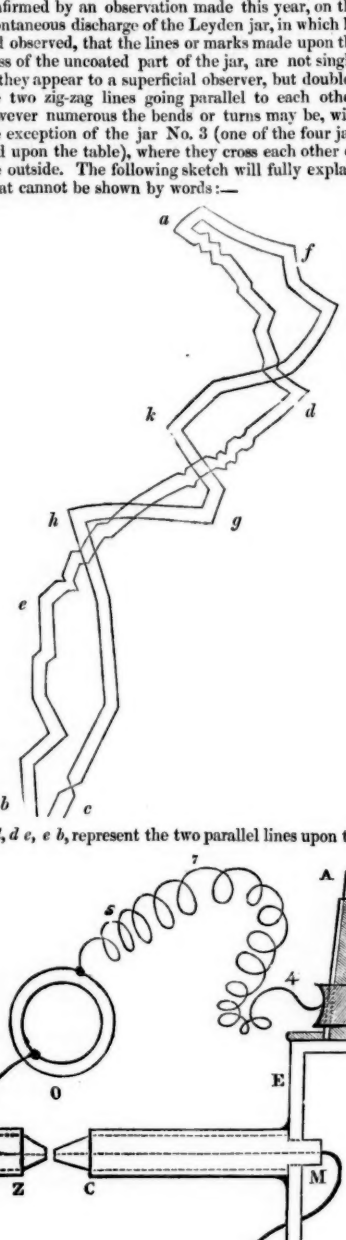
Mr. Mackie made a communication respecting the Tides of Glasgow and Dundee. Having been solicited about four years ago to furnish Tide Tables for Glasgow and Dundee, it became desirable to test the accuracy of calculations by observations on the actual times of high water at these places. Mr. Mackie had accordingly made numerous observations at Glasgow, and had induced Lieutenant Smart (harbour-master of Dundee), to undertake a series of observations for that port. As the prediction of the time of high water is an object of great national importance, he had been anxious to co-operate as far as was in his power with the eminent individuals who had taken a lead in this inquiry. The first particular to which he alluded

respecting the tides of Glasgow and Dundee, was the Establishment of these ports, or what is generally understood to be the time at which high water occurs after new or full moon. He had observed the time of high water on nineteen of the days of new and full moon, and found that the average is 1 hour 43 minutes. This is what Mr. Whewell terms the "Vulgar Establishment," and to obtain what he denominates the "Corrected Establishment," we must take the average interval between the meridian passage of the moon, and the time of high water. At all ports where good observations have been made, these intervals are found to vary, being greatest about the period of new and full moon, and decreasing till the seventh or eighth day following, after which they again increase. By taking an average of these intervals for five months, the "Corrected Establishment" is 1 hour 9 minutes, differing from the Vulgar Establishment 34 minutes. This variation in the periods which elapse between the moon's southing and the time of high water, has been called the "Semi-menstrual Inequality;" and if we assume a horizontal line, and erect fifteen perpendiculars to represent by their comparative lengths the intervals which elapse between the moon's southing and high water, every day from full to change, the line joining the extremities of these ordinates forms a regular curve. The intervals at Glasgow are nearly the same as those at London; but, owing to the frequent occurrence of floods, droughts, and particular winds, the curve of the half-monthly inequality is sometimes very irregular.—[The curves for Glasgow were shown by large diagrams.]—Mr. Lubbock has made it a subject of inquiry, what effect alterations in the channel of the Thames have had upon the time of high water. The river Clyde has undergone great alterations within the last eighty years. About that period the breadths of the river varied greatly from Glasgow to Bowling (a distance of ten miles). The breadth at Glasgow might be about five hundred feet, and it increased in a very irregular manner, till, at Bowling, it might be half-a-mile. It is now contracted by a rubble embankment, to the extent of 163 feet at Glasgow and 530 feet at Bowling. The general depth has been increased from four to fourteen feet. These operations have allowed the tidal wave to proceed more rapidly and farther up the channel; and the time of high water is at least one-half hour earlier than it was eighty years since. The difference between high water at Greenock and Glasgow, was at one time 2 hours. It is now only about 1 hour 22 minutes.

Lieutenant Smart (Mr. Mackie continued) had furnished him with eight months observations at Dundee, extending from January 1 till September 3, 1837. From these observations, he had found, that the Vulgar Establishment of that port is 2 hours 48 minutes, being 33 minutes greater than that given in the Nautical Almanac. The Corrected Establishment for Dundee is 2 hours 15 minutes, which agrees exactly with the Vulgar Establishment given in the Nautical Almanac. He had discovered the semi-menstrual inequality for Dundee. It differs considerably from that for London. The curve commences 46 minutes higher than the London one; runs parallel to it, till about the 6th day after new moon, after which it gradually diverges, and terminates about 35 minutes higher than that for London. With regard to diurnal inequality in the height of the tide at Dundee, there were in January twenty-six evening tides higher than those of the morning, in February 19, in March 24, in April 24, in May 19, in June 12, in July 10, in August 7, from which it appeared, that the number of evening tides higher than those of the morning have been gradually on the decrease. Mr. Mackie had not yet found that the pressure of the atmosphere had any influence on the height of the Dundee tides. The general theory on which to proceed in the calculation of tide tables, Mr. Mackie observed, was sufficiently known, and his attention has been entirely directed to the determination of those data which depend on locality.

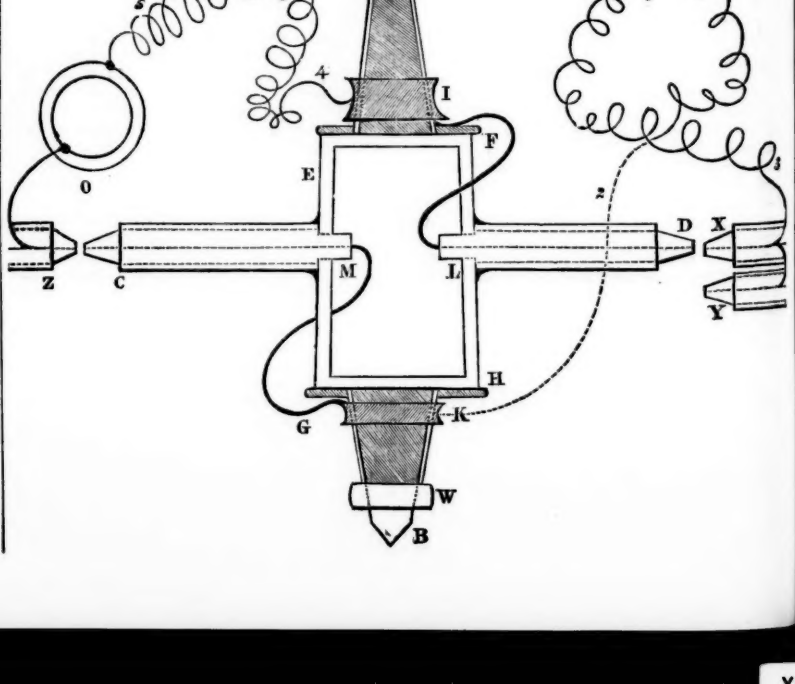
Lieut. Morrison stated his conviction, that tide observations, if continued for a less period than eighteen years, or a lunar cycle, would be useless.—Mr. Lubbock said, that the semi-menstrual inequality may be had from a few months observations, by taking the means of corresponding parallaxes and declinations.

Mr. Ettrick read a paper, 'On the Two Electricities, and on Prof. Wheatstone's Determination of the Velocity of Electric Light.' He stated, that he had read a paper before the Physical Section last year at the Bristol meeting of the Association, showing, that in piercing a card by the electric discharge, two or more holes are invariably made; and he contended, that they indicated the passage of two or more electric fluids, rather than two or more successive discharges. He then said, that such opinion had been confirmed by an observation made this year, on the spontaneous discharge of the Leyden jar, in which he had observed, that the lines or marks made upon the glass of the uncoated part of the jar, are not single, as they appear to a superficial observer, but double; the two zig-zag lines going parallel to each other, however numerous the bends or turns may be, with the exception of the jar No. 3 (one of the four jars laid upon the table), where they cross each other on the outside. The following sketch will fully explain what cannot be shown by words:—



a d, d e, e b, represent the two parallel lines upon the inside of the jar, and *a f, f k, k g, g h, h c*, the two parallel lines on the outside of the jar, the point *e* being the place where they cross each other. As the distance between the lines is not less than one-twelfth of an inch, there can be no mistake respecting their crossing each other. Though some parts of these lines appear as straight, or regularly curved lines; nevertheless, they are not so, but consist of an infinite number of minute sharp bends, which by going in the same direction nearly, give it the appearance of a straight line. Whatever objections might have been made to the supposition of these two lines representing the passage of two distinct electricities before the discovery of the crossing at *c*, after such a remark, Mr. Ettrick contended, we have an ocular demonstration of it. He then stated, that he had repeatedly observed an appearance in the spark from coated surfaces, that indicated the passage of contrary electricities, not only when the discharge was made in an exhausted receiver, but also in common air. The spark appeared as if divided into two portions by three blueish bands of light, one at each end, and another in the middle, which could not be supposed to be the case by the passage of the electric fluid from one end only. He then showed, that the old remark respecting the brush of light upon positively electrified points, and the star on negative ones, could not be taken as any proof of the passage of the electricity in one direction only; because the appearances are greatly modified by circumstances. If the point be placed in a glass tube, drawn out to a fine point, then the only perceptible difference is in the length of the brush, the positive being twice the length of the negative brush. He said that, although experiments similar to these tended to show the passage of two electricities, nevertheless they cannot be taken as absolute proofs, which, he contended, could only be directly proved by the visible passage of the two electricities, which Professor Wheatstone had shown a means of accomplishing. Mr. Ettrick then said, that it was much to be regretted that Professor Wheatstone did not succeed in his first attempt to ascertain the velocity, but was obliged to resort to the secondary method by reflexion. He then described a machine, by which he had rendered the passage of the electric light visible without reflection. To convey to our readers some idea of this instrument and its action, we have subjoined a cut representing the material parts of it.

Let A B represent the two points of an iron frame, moving in a solid cast metal stand. The central part of this frame is made square as at E G F H, and at the sides the hollow brass tubes C D are fixed, having the hollow insulating glass rods C, M, D L,



through which the copper wires C M G, D L F pass and touch the pieces of brass K I, insulated by glass cones with flanges. At Z X and Y there are brass tubes having glass tubes, through which copper wires pass.

The action of the machine was stated to be as follows:—suppose the inner one of the two circles to represent the inside coating of a Leyden jar, and the outer circle the outside coating. If an electric discharge be supposed to pass along the wire O to Z, and leap the interruption from Z to C, it would then pass on through the wire C M G to K, then through the wire 2 to the coil of wire 2 6 3, which was said to be one mile and a half long, when it passed on to X, from thence to D L F I, where crossing the brass, it entered the coil 4 7 5, and went to the outside of the jar. This supposes the machine to be stationary, but if it be now supposed to be put in rapid motion, the point D moving from X to Y, and that the point C is opposite the point Z, the point D being also opposite the point X at the moment the electric fluid enters the coil at 2: then, before it can pass through the coil 2 6 3, the point D will have passed the point X, and if the distance X Y be not too much, the electricity will strike the point Y, which is also connected with the coil of wire 2 6 3. Therefore, knowing the length of the coil, the diameter of the circle, through which the points pass, the velocity of the machine, and the distance of the points, we can easily ascertain the velocity of the electric light. Mr. Ettrick stated, that in a rough trial of it, the velocity was found to exceed 118,000 miles in a second of time, for it struck the point Y, when the velocity of the machine was eighty times in a second, the arms eighteen inches long, and the distance of the points one-tenth of an inch.

Several gentlemen objected, that the machine did not prove the same velocity as light, which seemed to be the great difficulty.

Professor Christie then gave an account of a singular optical phænomenon, sometimes seen at sunset.

Mr. Christie drew the attention of the Section to an optical phænomenon, which he had observed at sunset, when looking from the Down below the Needles Lighthouse, in the Isle of Wight, across the Solent, towards the Hampshire coast, and which he had described in a letter to Professor Forbes, referred to in the published Reports of the Association, He stated, that he had observed the same phænomenon on subsequent occasions. The appearance was that of a very distinct vertical ray of yellow light, having the sun for its base, of the same diameter throughout, gradually diminishing in brilliancy, but very distinctly to be traced to the height of more than 30°. This appearance continued for half-an-hour after the sun had set. On two other occasions he had observed what he considered to be the same phænomenon. In one case he happened to be on Westminster Bridge, and on the other on a hill about a mile to the north of the town of Bedford. On both these occasions the sun was considerably above the horizon, perhaps 6° or 7°, the strata of cloud in its vicinity were much denser than on the former ones, and the phænomenon did not present the same marked character. In these cases, instead of a brilliant ray rising 30° or 40°, the luminous appearance was rather that which would present itself, if a series of images of the sun were superposed, in the line of its vertical diameter, and extending over not more than 4° or 5°; the edges were ill defined. In his letter to Professor Forbes, Mr. Christie had suggested, whether the phænomenon could be due to a series of reflections of the sun's image by strata of thin cloud; but he now suggested, whether such a phænomenon would not be presented by successive reflections on the undulating surface of a stratum of liquid air, such as M. Poisson has supposed to exist in his new Theory of the constitution of the Atmosphere.

Mr. Lubbock said, that this was almost a proof of the constitution of the atmosphere being as M. Poisson had deduced from analysis it should be—viz. liquid or solid, and, therefore, reflective at its upper surface.—Mr. Stevelly asked, if so, why this phænomenon was not always seen at sunset in clear weather?—Mr. Lubbock acknowledged that to be the difficulty attending his view.—Mr. Addams said, that he had on one or two occasions seen the phænomenon described by Mr. Christie.

Section B.—CHEMISTRY AND MINERALOGY.

FRIDAY.

Mr. Deck, of Cambridge, exhibited a new form of cast-iron bottle, for obtaining oxygen from peroxide of manganese. It is to be obtained of Mr. Palmer, of Newgate Street, London.

Professor Johnston then brought forward his Report in reference to Dimorphous bodies. The report, he conceived, would occupy too much time, if read at length; he would, therefore, give a verbal account of its leading points, of which the following is a summary:—

When a body, chemically the same, is capable of assuming forms which belong to two different systems of crystallization, it is said to be dimorphous. Thus, as carbonate of lime occurs in forms reducible, some to the rhombohedron, and some to the right rhombic prism, it is a dimorphous body, and, *pari ratione*, if a substance were found to occur in shapes referable to three distinct crystallographic systems, it would be trimorphous. Isomorphous bodies, on the other hand, are such as, though chemically different, occur in the same crystalline form, of which the carbonates of lime and lead may be quoted as familiar examples. These two classes, therefore, the dimorphous and isomorphous, are obviously distinguished, in that the former can be separated from each other only by their mechanical or physical properties, whereas the latter differ in chemical constitution, and do not necessarily agree in any character save that of external form, and probably internal structure. Isomorphous substances, however, though chemically different, are so far analogous in their constitution as to admit, generally speaking, of having their composition represented by the same general formula. Thus $CO_2 + RO$ will express the composition of the carbonate of lime, or carbonate of iron, accordingly as R stands for one or other of these metals. To isomorphous and dimorphous bodies, Professor Johnston suggested, that a third class might be added—namely, the isodimorphous, or those whose corresponding dimorphous forms were the same. Thus, carbonate of lime and carbonate of lead are isodimorphous, as they both crystallize, either as rhombohedrons or right rhombic prisms. Isomeric bodies were next compared with those which are dimorphous, and the two classes found to differ, in that the dimorphous are necessarily isomeric, but not *vice versâ*. The proximate cause of dimorphism is altogether unknown; but the circumstances which would appear most influential in causing the same body to assume two distinct forms, would appear to be variations of temperature. Thus, the crystals of bichromate of potash and of biniodide of mercury, obtained at a high and a low temperature, are different, and it is remarkable that, in the case of these two salts, the forms acquired at high heats are not permanent, but alter rapidly when subjected to the slightest mechanical injury, such as would be caused by friction or percussion.

These remarks were not, we presume, put forward as possessing any novelty, but intended as introductory to the exhibition of a table, in which the physical and mechanical properties, relations to light, electricity, &c. of the two forms of all known dimorphous bodies, were (as far as they have been explained) registered in separate columns. This table will be useful in presenting, in an intelligible and compendious form, the amount of our knowledge and of our ignorance in a most interesting department of physico-chemical research, and stimulating philosophers to fill the many hiatus with which it abounds, a task which must be performed before we can hope to arrive at a just conception of the physical cause or causes of dimorphism, or reduce its phænomena to general laws.

Mr. Whewell inquired whether any column existed in Mr. Johnston's table, showing the angles between the axes of dimorphous crystals. Mr. Whewell stated that he was opposed to the adoption of any rule of philosophizing, but that which is founded on a knowledge of the laws of phænomena, and took exception to certain expressions employed by Professor Johnston—such as, that "the cause of dimorphism is deeper than that of the ordinary laws of crystallization." He also objected to the speaking of atoms as if they had a real existence, and recommended the examination of the relations of crystals to light, as subsidiary to the investigation of the laws of dimorphism and isomorphism.—Sir William Hamilton concurred with Mr. Whewell in objecting to the use of the term "atom," usually made, and conceived, with Newton, that phænomena being referred to the affections of atoms, may be due solely to attractive and repulsive forces. The present atoms of chemistry may not be incapable of decomposition, and are no doubt very different from those which chemists will admit a thousand years hence. As for his part, he rejected the existence of atoms altogether, and would replace them by attractions and repulsions acting upon mathematical points.—Dr. Kane conceived that the abuse of the term "atom," alluded to by Mr. Whewell and Sir William Hamilton, could not, with truth, be charged upon any well-informed chemist. He then observed, as well as we could collect, that arragonite may be brought to the state of ordinary calcareous spar, and that this, as well as analogous cases, are no doubt due to a tendency of the atoms to assume the condition of greatest stability; and finally stated, that he could not agree with physical philosophers in their propositions to supersede, by the application of polarized light, as an instrument of analysis, the researches of the chemist.—Dr. Faraday also objected to the employment of the term "atom" in chemistry, as he conceived that atoms were not only hypothetical, but that their existence was obviously disproved, even by the report of Professor Johnston. Dr. Faraday emphatically stated, that he was not an atomic chemist.—Dr. Apjohn, we believe, with the view of preventing any misconception, inquired whether the substances in Mr. Johnston's list of isomorphous bodies, were not merely plesiomorphous, to which Professor Miller replied that they undoubtedly were, and this was assented to by Mr. Johnston.

Professor Liebig was now introduced to the Section by the Chairman. At the request of the author, Dr. Faraday then read a communication by M. Liebig on the products of the decomposition of organic matters, particularly the Uric Acid. We are happy to have it in our power to give a verbatim report of this interesting and able paper:—

The important part which uric acid performs in the animal economy, has for a long time attracted the attention of the most distinguished physicians and chemists. Uric acid forms in one class of animals the whole of the excrement, and in another class it is its principal constituent, and it is accompanied by urea, a never-failing constituent of the human urine. Its extraordinary production in that morbid state of the body, which we call a predisposition to gout, is well known to give origin to one of the most painful diseases to which mankind is liable. It may be affirmed with the utmost certainty, that urea and uric acid are products of the organization. We cannot discover their existence in any part of our food, nor do they constitute a part of any organ, as fibrine does of the blood; but they are chemical combinations of a peculiar nature, on which account they come more within the range of chemical investigation than any other bodies of animal origin. Prout's masterly analysis has long since removed every doubt respecting the composition of urea, and the extraordinary, and, to some extent, inexplicable, production of this substance without the assistance of the vital functions, for which we are indebted to Wöhler, must be considered one of the discoveries with which a new era in science has commenced. Wöhler observed, that when cyanic acid is made to combine with ammonia, the product is urea; and he and I have, in a set of experiments which we made together, proved that these two bodies, when first combined, form cyanate of ammonia, a salt analogous to every other ammoniac salt; that is to say, the base can be replaced by other bases, and the acid by other acids: but that, a few minutes after the combination has taken place, all these properties disappear. We can no longer detect either ammonia or cyanic acid. A new substance has been formed, entirely different from every other chemical compound. To follow out the characters of urea, would here be quite out of place: it was, however, necessary to allude to it from its intimate relation to uric acid.

The elementary composition of uric acid has also been established beyond a doubt. We are certain that it may be expressed by the formula $C_{10}N_4H_4O_6$. We know also that this acid combines

with the different bases, and forms salts. Inorganic Chemistry is satisfied with the determination of these properties, but it must be evident that this formula can give us no idea of the manner in which the elements are united together to form this substance. If we admit the principle, that no ternary or quaternary compound can be formed, except by the union of a binary compound with an element, or of two binary compounds with one another, it is clear that any further investigation of uric acid must be carried on with the intention of discovering the compound elements into which it may be resolved.

This investigation, which promised to yield the most important results, both for Medicine and Chemistry, Professor Wöhler and I determined to undertake together. In Medicine, it was evident that we might have some new method of destroying calculi in the human bladder, without the application of external force. In Chemistry, the most interesting discoveries were also to be expected, as we had not the slightest doubt that urea, xanthic oxide, cystic oxide, oxalic acid (which last substance is well known to constitute frequently an ingredient in urinary calculi)—that all these bodies are produced by the decomposition of one single substance, and that substance uric acid.

Our analytical investigations of these various bodies have not yet made sufficient progress to enable me to communicate them here. My intention at present is, to point out the plan which we followed in our attempts to decompose uric acid into its proximate elements, and the singular results which we obtained. But, before proceeding to do so, I should like to notice a very remarkable compound, which will, I think, serve greatly to illustrate the subject we are at present occupied with.

Winkler found, that when the distilled water of bitter almonds was mixed with muriatic acid, a new acid is obtained. The distilled water of bitter almonds, in a pure state, contains nothing but prussic acid, and oil of bitter almonds (hydret of benzoyl). When treated with muriatic acid, we obtain sal ammoniac and the new acid, and nothing else. It is evident from this, and the conclusion is corroborated by the ultimate analysis of the new acid, that the hydrocyanic acid of the liquid is decomposed by the action of the muriatic acid into ammonia and formic acid; that the ammonia combines with the muriatic acid, and that the formic acid, in the nascent state, unites with the oil of bitter almonds, to form a compound acid, in which the power of saturation of the formic acid is not changed. This acid performs, in every respect, the part of a simple acid; and its existence has rendered probable the supposition, that the same views respecting other acids are not without foundation. Another interesting fact respecting this acid is, that when heated with hyperoxides, it is decomposed in a particular manner, only one of its proximate constituents being oxidized, while the other suffers no change. The products obtained are carbonic acid and oil of bitter almonds.

Now, I think it must be evident to every one, that uric acid must possess a composition similar to that of the acid just mentioned; and, therefore, that its oxidation in the same manner would, in all probability, lead to interesting results. We obtained, in fact, results which corresponded to our expectations. Uric acid may be considered as a compound of urea, with a peculiar acid—that is, we may view it as analogous to nitrate of urea. This acid contains the radical of oxalic acid, combined with cyanogen. I have attempted to show, in some former researches, that carbonic oxide, and not carbon, constitutes the radical of carbonic acid, and of oxalic acid, and that phosgene gas might be considered as containing the same radical in combination with chlorine. If we indicate carbonic oxide by R, these compounds will be as follows:—

1. Phosgene gas R + Cl. 2. Carbonic acid R + O. 3. Oxalic acid 2 R + O.

Now, the acid which combines with urea to form uric acid, may be expressed by the formula R + Cy. Viewed in this manner, the composition of uric acid will be 4 (R + Cy) + Ur.

Uric acid, when heated with brown hyperoxide of lead, was decomposed into three different products, oxalic acid, urea, and a peculiar substance, which we may view as a compound of cyanogen and water, and which is identical with a body long known, called allantoic acid, from having been first found in the allantoic fluid, but which it would be better to call allantoin, as it is capable of acting equally as an acid and a base.

One atom of uric acid, decomposed by the action of two atoms of hyperoxide of lead, is converted (supposing three atoms of water to be present,) into two atoms oxalate of lead, one atom of allantoin, and one atom of urea.

1 atom uric acid + 2 atoms hyperoxide of lead

$$(C_{10}\,N_{4}\,H_{4}\,O_{6}) + Pb_{2}\,O_{4}$$

gives

$$(R_{4} + O_{2})$$ oxalic acid + 2 Pb. O) oxalate of lead 2 atoms

(4 Cy + 3 Aq.) allantoin

1 atom urea.

Allantoin is the second body belonging to the animal organization, which we can form artificially in the laboratory. This substance can also be directly produced by the decomposition of cyanogen and water. It yields, when decomposed by other bodies, all the products which, from its formula, might be expected. Thus, with alkalies, it yields oxalic acid and ammonia, with strong sulphuric acid, carbonic acid, and carbonic oxide.

There are many bodies similar to urea and allantoin, all of which will probably, at a future period, be produced by artificial means; but, in order to arrive at this, the final object of investigations in organic chemistry, a great deal of labour, and that labour of a combined nature, will be required. I am certain that this object will be attained. Organic chemistry has made its first step, and already its field has been extended to a very surprising degree. We meet every day with new and unexpected discoveries. It is, however, remarkable, that in the country in which I now am, whose hospitality I shall never cease to remember, organic chemistry is only commencing to take root. We live in a time when the slightest exertion leads to valuable results; and, if we consider the immense influence which organic chemistry exercises over medicine, manufactures, and over common life, we must be sensible that there is at present no problem more important to mankind than the prosecution of the objects which organic chemistry contemplates. I trust that English men of science will participate in the general movement, and unite their efforts to those of the chemists of the continent, to further the advance of a science which, when taken in connexion with the researches in Physiology, both animal and vegetable, which have been so successfully prosecuted in this country, may be expected to afford us the most important and novel conclusions respecting the functions of organization.

Professor Johnston trusted, that the hopes of M. Liebig would be realized, and that British chemists would turn their attention to organic chemistry—and Dr. Thomson joined in this wish; and, as an inducement, stated, that it would be impossible for any individual to direct his attention to the subject without falling upon important discoveries.—Dr. Kane suggested that, as the best means of assisting and stimulating British chemists to cultivate organic chemistry, Professor Johnston should be requested to prepare against the next meeting of the Association a report of what has been done in this department. The subject was referred to the Committee of the Section, and the task was there devolved upon Professor Liebig, who requested that M. Dumas might be associated with him. This was, of course, acceded to.

Dr. Thomson read a paper 'On the Specific Heats of Alcohol and Nitric Acid.'

He referred to a former paper, read by him at the meeting of the Association in Bristol, and to the law of Dulong and Petit for simple substances, which he conceived established, viz. that the specific heat multiplied by the atomic weight = .375. For Binary compounds, he stated, that the same product = 2 × .375, and in all compounds equal to .375, multiplied by the number of atoms. In the case of sulphuric acid and water, however, he found that the product was less than would be given by this rule, which accounts for the heat which is developed during their mixture.

The result of his experiments on nitric acid and water was, that in every case the specific heat of the mixture, multiplied by the atomic weight, is equal to the constant .375, multiplied by the number of atoms in the mixture; the law already stated, as applicable to binary, ternary, &c. compounds. Such being the case, the heat which is evolved when nitric acid or alcohol is diluted with water, cannot be attributed to a diminution of specific heat; but is in all probability the result of an approximation of the atoms, as in every instance the specific gravity of the mixture is less than the mean density, or that which the mixture should have, if the substances presented to each other had continued to maintain their primitive volume.

Mr. Mushet then brought forward the results of experiments, in reference to the waste experienced by Hot and Cold Blast Iron, during the process of refining. We regret, that in consequence of an interruption, we are unable to report them.

Dr. Dalton communicated through a friend, a short paper 'On the Non-decomposition of Carbonic Acid by Plants.' He calculates, that in 5000 years, animals supposed to live upon the earth, would produce but .001 of carbonic acid, so that the assistance of plants to purify our atmosphere is not necessary. By experiment, he found, that a hot-house does not contain more or less carbonic acid, by night or by day, than the external air, and the results were the same in a number of repetitions of the experiments. This paper was said to have been penned during the convalescence of its illustrious author from a late attack of illness, and was listened to with the greatest attention.

Mr. Robert Mallet read a paper, 'On the Formation of Crystallized Metallic Copper, in the Shafts of the Cronebane Copper Mine, County Wicklow, Ireland; and of Native Sulphate of Iron and Copper, in the same locality.'

He alluded to the investigations, upon the subject of the precipitation of copper in a malleable state of Wach, Becquerel, and Clement and Bischoff, as given by Professor Johnston in his report on Chemistry, drawn up at the request of the British Association, and showed that two separate causes had been assigned for its production. Metallic copper has been frequently obtained, as is well known, by various methods in the laboratory, and in large masses in Daniell's Constant Batteries; but the present is the first occasion on which native copper has been found, actually detected, as it were, in the very act of formation in the mine shaft.

The Cronebane mine has been wrought for a very lengthened period, and has an additional interest as connected with the present subject, from the electro-magnetic condition of the next mine to it, the Connoree, which is part of the same vein, having been determined by Mr. Petherick, (*Philosoph. Mag. 3rd Series*, vol. 3.) He found it deflected the galvanometer needle 18°—that the ore was negative, and the ground positive. The lode is situated in clay slate, dipping to the S.W. The mine water is strongly cupreous, and deposits a slimy sediment of iron, and organic matter, probably "Glairine." In this slime, and adherent to the timbering of the mine, the crystals of pure malleable copper were found in considerable quantity. The mine water from whence these masses were formed, has a specific gravity of 1.032, at 58° Fahr. When evaporated to dryness, it leaves a horny residue, smelling of animal matter. It contains the mixed sulphates of copper and iron.

Amongst the many forces in operation to produce this metallic aggregation, the author suggests the possibility of galvanic action, between the lode and the timbering of the mine; having found the galvanometer much affected by a small series of plates of grey copper ore, and of fir timber, saturated with solution of sulphate of copper under the air pump—the exciting fluid being the water of this mine. The slime appears to act the part of Becquerel's clay plugs, or Wach's diaphragms.

The author also presented a specimen of native sulphate of copper and iron, from the same mine; from the ochrey slime at the bottom of a shaft of fifty fathoms deep, which had been full of water for above a century. It is found in small, brilliant, blueish green, rhomboidal crystals, and consists, according to the author's analysis, of—

Sulphate of Iron	34.2
Sulphate of Copper	65.7
	99.9

This analysis does not present any exact atomic proportion between the two salts, taking the atom of sulphate of copper to weigh 15.62 as determined by Dr. Thompson, and containing five atoms of water; but it is remarkable, that if the sulphate of copper be supposed to be the green sulphate, which contains but one atom, and has an atomic weight of 11.12, the above analysis will correspond to three atoms of green sulphate of copper, and one atom of sulphate of iron. In favour of this view is the circumstance, that these crystals were formed at a considerable depth, and consequent high temperature; and that it is by similar means that the green sulphate of copper is artificially formed. On the other hand, while the common sulphate of copper is isomorphous with the sulphate of iron, that which has but one atom of water is not so; it crystallizes in right prisms, while the common sulphate of copper assumes the form of the double oblique prism. It is possible, however, that the crystalline form of the green sulphate may be modified by the presence of the sulphate of iron.

Mr. Ettrick submitted to the Section a paper on browning gun barrels. After various experiments Mr. Ettrick discovered that the process consisted wholly in procuring a *permanent* peroxide of iron, and then colouring such oxide. He had procured not only all shades of brown, but a perfect black, by mixing 1 part of nitric acid with 100 parts of water, and applying this to the barrel with a rag moistened with it. It is material that the rag should be only so much wetted as to damp the iron, for if the fluid be allowed to stream, the oxidation will be unequally performed. It is also material that the barrel should be well smoothed and polished, and all greasiness removed by chalk before the browning commences, otherwise a bright brown is not attainable. The barrel, after being wet, should be placed for an hour or more in a window on which the sun shines, and when this process has been thrice repeated, the superfluous rust must be removed by a scratch brush consisting of a quantity of fine iron wire tied up into a bundle. This process being repeated eight or ten times, the barrel will have acquired as good a brown as it frequently receives from the common gunsmiths; but to do away with the disagreeable rusty appearance, it is necessary to proceed to colour the oxide, which Mr. Ettrick accomplishes by dissolving 1 grain of nitrate of silver in 500 of water, and applying this solution like the browning liquid. The number of repetitions of the nitrate of silver water would depend on the shade of brown required, but Mr. Ettrick found from 1 to 5 or 6 amply sufficient. The barrel is to be placed in the sunshine to obtain a dark colour. The last process was to apply the scratch brush freely, though lightly, and then polish the whole by bees' wax. Mr. Ettrick had, since the date of his own invention, discovered the process used by workmen generally, and long kept secret, but by the plan described a much finer brown is attainable than that gained by the Trade.

The concluding paper was by Mr. Robert Rigg, and related to what he denominates a peculiar property of the earth, and the changes which vegetables experience during the different stages of their germination and growth. An abridgment of this communication lies before us, but finding it to abound so much in details, which, in the condensed form, it would be impossible to render intelligible to the reader, we feel that we should not be doing justice to the author by saying anything of his researches, further than that they relate to questions of great importance; that he appears to have prosecuted them with great ardour; and that, we trust, he will give his matured results to the world through the pages of some of the scientific periodicals.

Section C.—GEOLOGY AND GEOGRAPHY.

FRIDAY.

Mr. Dawson exhibited a collection of fossils from New South Wales.—Mr. Murchison communicated some information which he had lately received from M. Agassiz, who was bringing out some new livraisons of his great work on fossil fishes, and he mentioned that in order to enable that gentleman to carry on his work a further grant of money would be recommended by the Geological Committee. The remains of fish had been found to be the most valuable of all indexes for determining the ages of rocks, as there was a plain separation of these animals in formations of different ages.—Mr. Murchison showed drawings of some of these fossils, and remarked that in the lias and the older beds the fishes were characterized by a tail quite different from that belonging to those found in the newer formations, and he exhibited on a board representations of some of the peculiarities of those discovered in the Silurian rocks. He must record the names of Drs. Lloyd and Lewis as having given him material assistance in the collection of these remains. He had found remains like the shagreen or tuberculated skin of some recent fishes, also extraordinary teeth belonging to a species termed *Stogodus Priscodontus*, and fish called *Seraphim* by the quarrymen, from their seeming to possess only head and wings, to which the name *Pterigodus* has been given; also many others which M. Agassiz would soon have described and published.

Mr. Griffith directed the attention of the meeting to a section of a district in Ireland, from Butler's bridge in the county of Cavan to Benbulben in the county of Sligo. This section passes through a part of the Connaught coal district, and possesses some interesting phænomena, besides having the merit of great accuracy, being made after the Ordnance Trigonometrical Survey had been completed. After detailing a few of the geological features of Ireland, which had been previously, at the Dublin meeting, described at full length, Mr. Griffith pointed out that above the old red sandstone we find a yellowish sandstone alternating with coal strata; at Butler's Bridge, where the greywacke attains an elevation of 180 feet, we have an anticlinal line; here sandstone alternates with mountain limestone, which at Belturbet is 4 to 500 feet thick; to this succeeds a series of impure shales and a blackish limestone, called calp by Kirwan; these extend to Sliable Rushan, and are succeeded by another bed of limestone equivalent to the great scar limestone of England, and like it containing many caverns which do not occur in the under or first-mentioned limestone; it is from 460 to 500 feet in thickness in this place. It undulates in the valley of Swadlinbar, and goes under the mountain of Culkeagh, where the source of the river Shannon is at an elevation of 298 feet above the sea. Continuing the line of section, we pass through part of the coal formation of Leitrim and Sligo; we find granite at Benbo mountain, 1365 feet in elevation; around this are primary slates, hornblende slates, and steatite enclosing garnets; on the other side of Benbo we again come on the mountain limestone, which extends to Benbulben, underlying shale and sandstone; above these we find the great shale, containing shells of the genus Posidonia; several other beds of shale are found in ascending in the scale. At Lugacaille, across the valley of Swadlinbar, a rock like millstone grit forms the mountain cap; this contains remains of Stigmaria; coal of an impure quality extends to Lackugh mountain. In all the shales the shell posidonia occurs as well as a great variety of other fossils, all of a very small size. —Sir Philip Egerton stated that his first study of Geology was in this district; he had there remarked that the sandstone between the shales contained no organic remains, and but for their absence it would have been classed with a sandstone quite distinct.—Mr. Greenough stated also that these lower shales and impure limestone had not been sufficiently examined in England, and recommended further investigation. —Mr. Sedgwick spoke of the difference of the coal phænomena of England and of Ireland: in the latter country the coal strata generally occur under the millstone grit, whereas in England the most valuable beds are found above it. He conceived it difficult to make divisions in carboniferous limestone according to its fossils, the accumulation of fossils depending upon adventitious circumstances. A particular kind of animal life may characterize a formation, but within the boundaries of that formation there can be no modifications but what are caused by local agency; animals living in the muddy bottom of a sea must differ from those inhabiting a sandy bottom, so that it becomes difficult to give an exact determination to separate beds of a formation by their fossils.

The Rev. D. Williams exhibited a section of part of Devonshire, and read a paper 'On some Fossil Wood and Plants recently discovered in a series of rock far below the culm field of Devonshire, being one of the results of an attempt to determine the relative age and order of its anthracite and floriferous shales and sandstones.' As the meeting was pressed for time, he read only the more important parts of his memoir.

Mr. Williams commenced by stating, that he produced the specimens of fossil wood and plants, in compliance with a recommendation of the Committee of the Geological Section of last year. In the summer of 1835 he had taken many of the upper culm plants to the meeting of the British Association at Dublin, but beyond the fact (which he then stated) of their occurring in a deep trough, bounded by the ridge of Exmoor on the north, and the granite of Dartmoor, and the quartz slates of Forrabury and Boscastle on the south, he knew nothing, and, in consequence, determined to commence a careful and critical analysis of the structure of that interesting section of the great grauwacké group.

The Exmoor and Quantock group was of such perfectly simple structure as to be briefly explained by *a series of successive emergence*—the key to unlocking it being found in the fact that the lowest and most ancient emerged at and towards the N.E.; thus, in the ascending order, the Cannington Park limestone, near Bridgewater, was the lowest rock of all, rising immediately from beneath a low ridge of red, compact, and sometimes confluent sandstone and shale, evidently belonging to No. 2 on the section. At Wilsneck, in the Quantock and Dunkerry Beacon in Exmoor, these sandstones, marked No. 2 (with the exception of Cawsand Beacon), culminated into the highest land in the West of England; and this fact, coupled with their enormous force and thickness, would probably explain the successive emergence of the respective members; so that, unless we assumed the ridge of Exmoor and the Quantocks to have a true, though generally concealed, granitic axis (looking at the granite of Lundy Island on the one hand, and the syenite of the Quantocks on the other,) this great individual of the system must be represented as such. The different members were persistent throughout, in a line about W. by N. and E. by S. The Quantocks were exclusively made up of Nos. 2, 3, 4, and 5; being geographically insulated, they described a rather narrow ellipsis, bearing about N.N.W. and S.S.E., its greater axis being intersected by those four members successively, at about an angle of 30°.

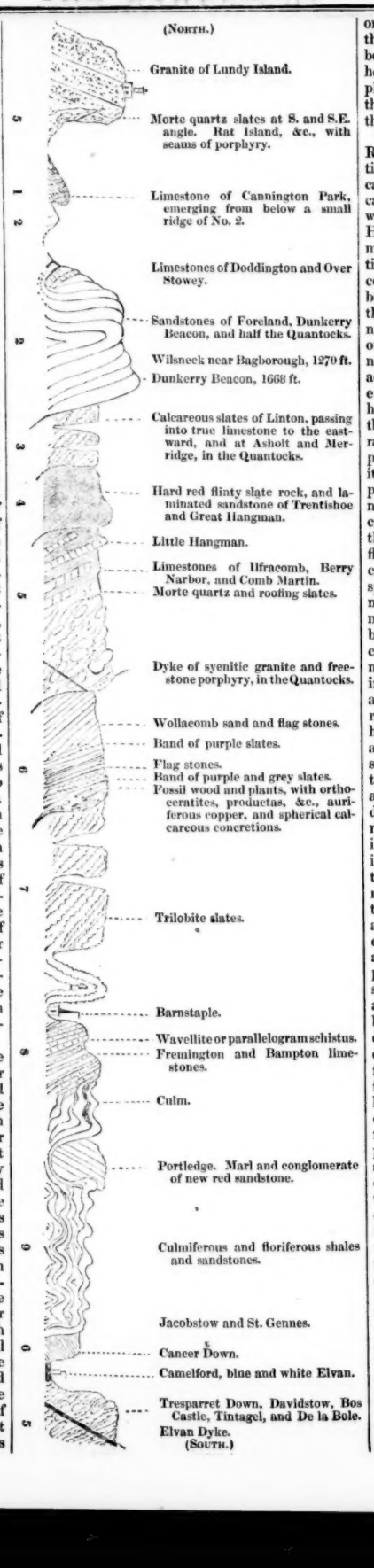
The Morte quartz and roofing slate was the most extended and thickest of any—it constituted the South and S.E. angle of the granite of Lundy Island —it was intersected by a dyke of syenite and freestone porphyry in the Quantocks; and, in the southern terms of the great trough, by whatever synonym it might be distinguished there, was intimately associated with the elvans and granite of Cornwall; it was characterized on either hand by great amorphous masses of quartz, spangled with flakes of mica, which, protruding in snow white masses on the surface, were very serviceable to the geologist to enable him to determine his whereabout amid the black waste and morass of Exmoor.

Having stated that the Wollacomb sand and flag stones contained, in their upper division, calcareous courses producing orthoceratites, producta, &c. in common with the fossil wood and plants exhibited, and that they distinctly dipped away below the trilobite slates, which, making all allowances for angle of dip, inflexions, and undulations, averaged nearly a mile and a half in true diameter,—he proceeded to discuss the disputed question of the relative age of the culm-field and its floriferous shales and sandstones. Did those trilobite slates then pass into the wavellite limestones and schistus? He confidently believed they did. He believed they did at Sticklepath Hill, immediately west of Barnstaple; and when he had made out the (to him) extraordinary faults which dislocated the region to the east and west of Barnstaple, he felt assured he should be able to show equally or more conclusive instances, which (inasmuch as those limestones and shales contained plants) would alone afford tolerably conclusive evidence of the relative age of the culm-field. The faults alluded to were not the traps up and traps down he had hitherto been accustomed to, but true horizontal faults, the trilobite slates and wavellite schistus respectively interlocking and dovetailing into each other; a result probably of the exertion of the enormous lateral force which had frilled and puckered the shales and sandstones of the culm-field into such strange contortions—those contortions,

however, he thought might be explained and expressed as closely compressed undulations, the entire class of phænomena probably caused by the intrusion into the culm field of the granite of Dartmoor.

So far as organic fossils were concerned, there was a great hiatus between the trilobite slates and the wavellite limestones, but the discrepancy was no greater in this respect than between the Wollacomb sandstones, or between the wavellite limestones and the sandstones and shales of the culm field—and this, admitting that organic fossils had any authority in determining the question of the geological age of the culm field and its flora, which he emphatically averred, so far as they were yet known, they had not—all that the fossils of Devon could be adduced to prove distinctly, was the fact of the mountain limestone being the last or newest formation of that stupendous system, the grauwackè or transition. The goniatites and orthoceratites, together with posidonia, and other bivalves, therefore proved nothing unless it could be shown that they made their appearance *first* in, and were exclusively restricted to, the mountain limestone—and if these few and far between reliquiæ of the wavellite limestones should be appealed to, to establish their identity with the great upper carboniferous limestone, he was prepared with evidences infinitely more varied and abundant from the Cannington Park limestone, ten miles in true vertical depth below it, to show the same apparent identity. The same might be said of the Doddington limestones—of the Linton slates and limestones—of the limestone of Ilfracomb—to a less extent of the upper beds of the Wollacomb sandstones, where lepidodendron, bothrodendron, and stigmaria (all true coal plants), place them in the same category—and of the trilobite slates—but where, he asks, must we include the wavellite limestones, if we only regard the organic remains of the mountain limestone, which are absent? He would, for instance, adopt the synonym of the latter—viz. "the encrinal limestone," and we have the anomaly of its Devonshire equivalent not possessing a single encrinite; added to these considerations, he appealed to the improbability of some twenty or thirty insignificant beds of limestone, representing the great carboniferous formation, which extends in such imposing force and importance from the Scottish border to the Land's End of Wales and Ireland. He objected also to the barren tract in Pembroke being admitted as a case in point, to fortify this hypothesis—that barren tract being included in well defined terms of the mountain limestone, while the culm field of Devon is not. These several considerations, supported as they are by the collateral and positive testimony of the fossil wood and plants from the Wollacomb sandstones, throw such accumulated weight into the scale of the opposite hypothesis, viz. that the anthracite of Devon and its flora belong at least to the upper grauwackè (below the old red sandstone), that he apprehends geologists ought to include them provisionally as such, till stronger facts and evidences than we are yet in possession of, shall justify accepting them as a true cotemporaneous equivalent for the carboniferous limestone and the upper great coal field.

Mr. Murchison differed in opinion; the passage of these culm strata downwards was wanting, or the proof that they form a regular coal basin would be complete; indeed, he conceived it impossible to place these beds in the Silurian system, as with them are found shells evidently of the regular carboniferous formation. On the opposite coast of Pembrokeshire we find a coal basin of very similar character.—Mr. Greenough was inclined to adopt the views of Mr. De la Beche. We must be guided by analogy with other countries where similar phænomena occur; foreign geologists could not distinguish any separation in the plants found in the coal strata from those of transition rocks.—Mr. Sedgwick mentioned that when Devonshire had been first mapped, these culm strata were coloured as grauwackè, and as *lower* than the other rocks of the county. By connecting Devon with Cornwall he had been enabled to detect this original mistake. These culm strata did not rest upon the mountain limestone, as in the north of England, and a hiatus in the evidence consequently results; there might be even a cause of error in the fact of some of the silurian calcareous beds being rich in fossils, but he had found one which differed from the rest in its organic remains. He should be inclined to consider the base of the culm measures to lie under the carboniferous limestone in the order of succession, but he was sceptical respecting the evidence supplied by plants, as there was some confusion in determining their species. Were remains of fish to be procured, the question could be easier settled.


(North.)
Granite of Lundy Island.
Morte quartz slates at S. and S.E. angle. Rat Island, &c., with seams of porphyry.
Limestone of Cannington Park, emerging from below a small ridge of No. 2.
Limestones of Doddington and Over Stowey.
Sandstones of Foreland, Dunkerry Beacon, and half the Quantocks.
Wilsneck near Bagborough, 1270 ft.
Dunkerry Beacon, 1668 ft.
Calcareous slates of Linton, passing into true limestone to the eastward, and at Asholt and Merridge, in the Quantocks.
Hard red flinty slate rock, and laminated sandstone of Trentishoe and Great Hangman.
Little Hangman.
Limestones of Ilfracomb, Berry Narbor, and Comb Martin.
Morte quartz and roofing slates.
Dyke of syenitic granite and freestone porphyry, in the Quantocks.
Wollacomb sand and flag stones.
Band of purple slates.
Flag stones.
Band of purple and grey slates.
Fossil wood and plants, with orthoceratites, productas, &c., auriferous copper, and spherical calcareous concretions.
Trilobite slates.
Barnstaple.
Wavellite or parallelogram schistus.
Fremington and Bampton limestones.
Culm.
Portledge. Marl and conglomerate of new red sandstone.
Culmiferous and floriferous shales and sandstones.
Jacobstow and St. Gennes.
Cancer Down.
Camelford, blue and white Elvan.
Tresparret Down, Davidstow, Bos Castle, Tintagel, and De la Bole.
Elvan Dyke.
(South.)
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Mr. Hopkins made a communication 'On the Refrigeration of the Earth.'—This gentleman has distinguished himself by the application of mathematical and physical science to Geology, and in the present case has made use of a number of geological facts on which to found calculations of a very intricate nature. He commenced by observing, that it is requisite to make some hypothesis before we enter on investigation; and if we discover that the result of observations coincide with an hypothesis, we may consider that to be pretty near the truth. Were we able to apply a thermometer to every part of our globe, both externally and internally, we should multiply very much our means of ascertaining a number of facts connected with its temperature; but as this cannot be accomplished, we must endeavour to employ whatever evidence may lie within our reach. Let us then, he continued, suppose a globe to be heated; of this there may be two cases, one the simultaneous uniform raised temperature of the mass—the other, heat applied to it in one part and afterwards diffused through it by degrees; the question then is, what is the temperature at any subsequent time, and can this be a matter of calculation? if so, we must try if our calculations agree with experiments. If we suppose that our globe was originally hot to the degree of fluidity, and even to look for proofs in its present condition, the first that would strike us would be the spheroidal shape, caused by the rotation of a fluid mass round an axis, and this can be submitted to mathematical calculation, and be readily confirmed by actual experiment. The next proof is the peculiar constitution of the earth's crust, which we find in many places bearing the marks of dislocation with irrupted matter intruded, exemplified by dykes of trap, and inclining us to suppose that there is a solid crust resting above something fluid below. Mr. Hopkins here contended, that we must not take the Mosaic account of the creation in its generally accepted sense, as the usually allowed age of the earth was too short for the completion of these phænomena; and that we were by no means trenching on the domain of true religion by reasoning thus, but simply making use of the evidence afforded us by the Deity in nature itself and by the exercise of our powers of induction. All must now be fully aware of the great time required for the developement of geological phænomena, the greater part of which long preceded the creation of man. Mr. Hopkins then stated that all natural phænomena must arise from natural causes, whether these be the regular physical causes always in exercise, or the interferences of creative power, as in the case of miracles. The view of present geological phænomena might suggest the idea of a permanence of natural causes; still there might not be a permanency of condition, and without this we cannot conceive a permanency of action. If the earth be conceived to have been originally a hot fluid mass, it may have cooled in the manner of a fluid in a vessel, the upper part first losing its heat, and then descending by its gravity so as to cause a constant circulation. Two antagonist forces must be now taken into account—the heat and the pressure. The greater the heat of the mass the slower will be the solidification, but this latter increases as the pressure. When the temperature at the surface is least, the pressure is least, but is greatest when the temperature at the centre is a maximum; we must therefore know the relation between the tendency of the pressure to promote solidification and that of the temperature to resist it. If we suppose the earth to have cooled first at its surface there would be a consequent increase of superficial density, but still the ceasing of circulation implies a ceasing throughout the entire mass. Some philosophers have urged the impossibility of a heated centre now existing, as that would imply the actual existence of a circulation which cannot now be going forward. Suppose another case, that the earth cooled first at the centre, and the cooling proceeded upwards, then we should have a solid centre and a fluid superficies; or suppose another condition, that, after

solidification of the central parts, the surface became hard, we should then have a fluid band between the centre and the superficies. The present state of our knowledge does not enable us to decide which of these cases actually exists or has existed. We are aware of the increase of temperature ascertained by experiments in mines: we are as yet unable to assign a cause for this. M. Poisson cannot conceive that there can be an increase of heat at the earth's centre, as that would cause an expansion, of which we have no proof; and he has brought forward some other objections and opinions which have been discussed by Mr. Whewell. Although our data are thus far trifling, we find that all our calculations and experiments lead us back to a contemplation of the earth's original fluidity.—Mr. Phillips spoke in commendation of the talent and ingenuity of Mr. Hopkins in bringing to the aid of geological science the subtle powers of mathematics, which will eventually place it in the same rank with other exact sciences.—Mr. Whewell stated that Mr. Hopkins had not mentioned to the meeting some of the most recondite parts of his investigations, which, when completed, would astonish the scientific world. He was employed in calculations of the disturbances produced on the earth by the sun and moon, on the supposition of its possessing at different times certain states or proportions of fluidity, and then to ascertain if the results will agree with actual phænomena.—Mr. Sedgwick mentioned the proofs we have of internal action in the earth, from the crystalline nature of some of its mineral masses, and from the perturbations of the surface continually going forward in the cases of earthquakes, leading us to suppose that this surface is the cover of a series of vaults.

In consequence of several communications not having been yet brought forward, it was resolved to hold a Sectional Meeting on the following day.

SATURDAY.

Mr. R. W. Fox stated, that at the Bristol Meeting of the Association he had been requested to make experiments on the Electricity of Mineral Veins. He had been unable to do much since that time—he had merely to mention, that he had made experiments at Middleton Teesdale, in the county of Durham, and found a slight electric action in lead veins running east and west, other veins crossing these at right angles: in Goldbury mine he found it very trifling in lead veins occurring in sandstone. Indeed, he had generally observed, that the electric action was much more feeble in veins situated in sandstone and limestone than in those placed in granite and killas. He remarked a singular phænomenon in a coal-mine at Cockfield Fell:—It is well known, that coal is a bad conductor, but cinders the reverse; and in this mine he found an altered coal, resembling a cinder, which would not conduct at all; but he was able to render it a good conductor, by causing it to be heated. Mr. Fox then made some observations on the temperature of mines, and detailed some experiments. He had observed, that adventitious circumstances had the effect of reducing this temperature, so that experiments must be made independent of accident. He had accordingly placed one thermometer, in various mines, at a depth of three feet *in* the ground, and another *upon* the ground of the mine, and then marked the degrees; and he uniformly found a difference of one or more degrees between the two instruments, the imbedded one rising sometimes as high as 92°. Also, in a mine having an inclined lode, he placed on the floor of a horizontal gallery a pair of thermometers, one instrument imbedded, the other not, and found that, at a distance from the lode of twenty-four fathoms, the deep one marked 85¼°, and the other 84°; at ten fathoms off the lode they were respectively 86½° and 85°; in the lode itself, and upon it, 92° and 88°. Mr. Fox found the increase of temperature vary in different mines, and also in the rocks themselves, which he ascribed to the percolating water—killas being more porous, becoming sooner heated by water filtering through, than granite, which is more compact.

A conversation arose between Messrs. Fox and Henwood respecting the water in these rocks—the latter stating, that in slate rocks there was a quantity four times greater than granite, and also that the temperature was four degrees higher. This water had first of all to pass through the granite; and Mr. Henwood could not understand why the temperatures differed on Mr. Fox's explanation. In order to make the thermometer stand at the same height in granite as in killas, it must be sunk to a much greater depth in the rock.—Mr. Clarke said, it was possible that the water might have existed in the granite in the shape of steam.—Captain Portlock thought it might be explained, by the water rising from below at a high temperature, which it would impart to the rocks through which it passed, in proportion to their porosity.—Mr. De la Beche was inclined to agree with Mr. Fox, and praised his manner of making the experiments.—Mr. Sedgwick instanced Becquerel's formation of artificial metallic veins by means of galvanism, and considered Mr. Fox's experiments as having decided the relation of veins with the rocks containing them, having shown the feeble electric action of lead veins in secondary rocks to that of tin and copper veins in granite and killas. A mine was lately opened at Whitehaven, which was kept in such a state of ventilation, that it was a most favourable place to try the temperature; and here the variation did not amount to two degrees between the summer and the winter.

Mr. Hall exhibited a geological map of Derbyshire, and pointed out the different strata. He conceives there are four different beds of limestone, and three of toadstone; in the northern part of the limestone field the veins of lead running from magnetic N.N.E. to S.S.W., and in the southern, in a direction almost at right angles to this. The Derbyshire coal field lies upon millstone grit.

Mr. Barker stated, that late observations of Mr. Hopkins had proved that the three beds of toadstone were merely parts of one bed, which had been dislocated; and that, in consequence of the suggestions of that gentleman, a new mine had been lately opened, since the new light which he had thrown upon the structure of that country. The only case of a second toadstone, was near Bakewell.—Mr. Sedgwick considered that the toadstones are tabular volcanic masses; he praised the labours of Mr. Hall, who had been a pioneer in geological investigations, and who had furnished most valuable information to Mr. Farey, when drawing up his memoir on Derbyshire.

Mr. Clarke had a communication to lay before the meeting, on the Plastic Clay of Dorsetshire; but, as the time was nearly spent, he made only a few observations. He mentioned the existence of systems of valleys which have been caused by a regular disturbing force: there seemed to be three systems almost perpendicular to each other, which were manifest illustrations of the theory of Mr. Hopkins. In these valleys were found rivers,—the Wiltshire Avon, for example,—which, although modifying their beds from time to time, were not the causes, but the effects of these valleys. Some cliffs on the sea shore, which Mr. Lyell had examined, and which contained fissures, ascribed by that gentleman to the action of water, had evidently been subjected to a disturbed force, which had been the cause of these rents. Mr. Clarke related, also, the increase of the bar at Poole Harbour, and the probability of its eventually stopping the navigation, unless the wearing away of certain chalk cliffs caused an alteration in the channels. He exhibited specimens of fossil wood penetrated by shells, which were found in the plastic clay; and stated, that the gravel of Dorsetshire had been drifted from the westward; he had been able to trace fragments of oolite to that formation at Bridport, as well as boulders from the rocks of Devon and Cornwall.

The business of the Section ended with a paper from Mr. Hardman Phillips, 'On the Anthracite Formation of Pennsylvania.'—This formation occupies a space of 200 miles long, by about 30 broad, having its beds often cropping out above the level of the running waters of the country. These beds are from four to nine feet in thickness, and the coal has a specific gravity of 1·279, containing 22½ per cent. of volatile matter. Its dip is generally very trifling, being one inch in a yard, so that it is easily worked by lead drifts; in one place, however, there is a greater dip, it there forming an angle of about 30°. It is used in the iron manufactures of Pittsburg, but for smelting the ore the miners prefer charcoal.

SECTION E.—ANATOMY AND MEDICINE.

FRIDAY.

Dr. Yelloly, seeing there was so great a pressure of business before the Section, would at the commencement, fearing that there might not be time at the close, move that a vote of thanks be given to Dr. Rutter and the members of the Medical Institution for the great accommodation afforded and the attention paid to them. Prof. Evanson seconded the motion, which was carried unanimously.

Dr. Warren, of Boston, U. S., then offered remarks 'On some Crania found in the Ancient Mounds in North America.'—Whatever related, he observed, to the lost nations of North America is interesting. The fate of a people which occupied the richest part of that country, for an extent of more than a thousand miles, is involved in the deepest obscurity. Nothing remains of their history, and we can gather no ideas of what they were and what they did but from the constructions existing in the territory they inhabited. These works are numerous, and scattered over the country, from the lakes of Canada to the Gulf of Mexico. They consist of regular lines, having considerable elevations and great extent, of mounds or pyramidal eminences, and of spacious platforms of earth. These different works were adapted for fortifications, for places of worship, and for cemeteries. Within the last two years, reports, he said, had reached the Atlantic States of very extensive remains of structures indicating the existence of one or more considerable cities in the territory of Onisconsin, formerly a north-west territory of the United States. The antiquity of some of the numerous works alluded to was great; there are circumstances which led him to refer them to a period 800 or a 1000 years back. The circular and pyramidal eminences seem to have been destined for two purposes: for places of worship and for cemeteries. Some of them contain immense heaps of bones, thrown together promiscuously, as after a bloody battle; in others the bodies are regularly arranged, and in some there are only one or two bodies: the bones in the last are usually accompanied by silver and copper ornaments, some of which are extremely well wrought. The crania found in these mounds differ from those of the existing Indians, from the Caucasian or European, and in fact from all existing nations so far as they are known. The forehead is broader and more elevated than in the North American Indian, less broad and elevated than in the European; the orbits are small and regular. The jaws sensibly prominent, less so indeed than in the Indian, more so than in the European. The palatine arch is of a rounded form, and its fossa less extensive than in the Indian or African, more than in the European, owing principally to a greater breadth of the palatine plate of the os palati. But the most remarkable appearance in these heads is an irregular flatness on the occipital region, evidently produced by artificial means. These peculiarities, with others more minute, give a character to these skulls not found in any living nations. Dr. Warren also stated that he had received other crania, which at first view he believed to be of the same race and nation, for they resembled them in all their peculiarities, more nearly than one Caucasian head resembles another; and he exhibited drawings and a cast in proof of the exactness of this resemblance; but these latter, he observed, were species of ancient Peruvian heads. Now the cemeteries of the ancient Peruvians are distant from the Ohio mounds more than 1500 miles, yet the facts stated above rendered it certain, in his opinion, that these nations were connected by blood, and rendered it probable that the northern race, being driven from their country by the ancestors of the existing race of North American Indians, retreated, after a long resistance, to South America, and gave origin to one of the nations which founded the Peruvian empire. Anatomy, also, he observed, showed that there was much resemblance between the crania spoken of and those of the modern Hindoos; and instruments, ornaments, and utensils have been discovered in the mounds, which bear a great resemblance to articles of the same description seen in Hindostan. The facts stated above lead him to the following inferences:—1. The race whose remains are discovered in the mounds were different from the existing North American Indian. 2. The ancient race of the mounds is identical with the ancient

Peruvian. To these conclusions might be added others tending to support existing opinions, but which are hypothetical:—1. That the ancient North American and the Peruvian nations were derived from the southern part of Asia. 2. That America was peopled from at least two different parts of Asia, the ancient Americans having been derived from the south, and the existing Indian race from the northern part of the same continent.

Prof. Evanson was then called on to read his paper entitled 'A Critical Analysis of the different Methods that have been adopted for determining the Functions of the Brain.' The Professor said he would orally communicate the subject of his paper, as he should thus occupy less time. The problem proposed, he observed, is—"What are the functions of the brain?" The object of the present inquiry is to analyze the several methods tried for the solution of this problem, and to pass a judgment on each. The first method employed was the anatomical: the brain was dissected, and its structure examined, in order to determine its functions. But the mere anatomical examination of an organ in the body is inadequate to reveal to us its functions or uses: we may thus acquire a knowledge of its component parts, or some insight into its structure; but something more than merely dissecting the dead is required before we can divine the uses of any part in the living; suffice it to say, that dissection *has not* revealed to us the functions of the brain. This organ is every day dissected; its functions are still a matter of dispute. Some other method of investigation then was necessary, and another was tried, which might still be looked upon as an anatomical method, but in this instance the dissection was performed on the brain in the living animal, and hence may be denominated the method by vivisection; this was a step in advance. The effect of injury or removal of certain parts of the brain was compared with the influence thus exercised on the manifestation of function. When a part was cut out, its function could no longer be exercised; and it was agreed that by removing each part in succession the use of each would be discovered. This sounded speciously enough; but the results have demonstrated it to be wholly inadequate. To be able to remove each part separately, we should first know what these parts were; and then, was it possible to remove one part of the brain without injury to any other part, or such a shock to the whole system as must materially derange every manifestation of function? Besides, this method could throw no light on the uses of those parts of the brain which are peculiar to man, and therefore the most interesting and important, but which, not being present in the lower animals, could not be made the subject of such experiments. Accordingly, we find, that such experimenters not only disagree among themselves, but different experiments performed by the same physiologist contradict each other. Some of the more particular points which have been thus attempted to be established are a relation between injuries of certain deep-seated cerebral parts, and the disturbance of equilibrium in muscular motion. Thus Fodera found that removal of part of the cerebellum was followed by motion *backwards*, but removal of the whole cerebellum caused the total disappearance of the power of motion. Magendie, however, found that a duck deprived of its whole cerebellum could still swim, but only backwards; while division of one crus of the cerebellum in an animal, was attended by the curious phænomenon of a constant rotatory motion of the body on its axis towards the side wounded. Flourens, who was one of the earliest investigators in this line, details many such experiments, and acknowledges a very curious and unexpected result, which, in fact, at once exposes the liability to fallacy in attempting to draw conclusions from such experiments. He found that division of the semicircular canals in the ears of birds (or rather the membranes lining these canals) was followed by abnormal motions, resembling those consequent on dividing certain of the deeper seated parts of the brain; so that the conclusion was irresistible, that these canals had the same right to be regarded as regulators of muscular motions as any parts of the brain, a conclusion obviously absurd, and which could not have followed had the method of investigation been correct. Bouillaud, in instituting experiments of this description, has devoted a particular series to investigating the functions of the anterior lobes of the brain, and although the result at which he has arrived is too vague and general to advance our knowledge much, still it is so far satisfactory as to lead to something like a determinate result, and one that is in accordance with results obtained by other modes of investigation. According to Bouillaud, ablation of the anterior part of the brain was always attended by a state resembling idiotcy, the power of discriminating external objects being totally lost, although the faculties of sensation seemed still to exist; and hence the conclusion that the anterior part of the brain is the seat of the several intellectual faculties. Bouillaud was so far fortunate in this experiment, that in removing the anterior lobe of the brain he separated a part which possesses a distinction of function;—but how vague the information imparted—no attempt to locate a single one of "the several intellectual functions," the seat of all of which is placed in this anterior part. Such attempt, however, must have been vain by such a method, and the amount of information obtained by vivisection must after all be allowed to be but small indeed. Accidents occurring in the human subject, occasionally afford a rude specimen of the result of such method as applied to investigating the functions of the brain in man—but here the result is not only curious, but somewhat startling; for the loss of large portions of brain from the anterior lobes is recorded to have occurred without any disturbance of the intellectual powers. Some remarkable cases, indeed, of injury of the brain are on record, which at present appear inexplicable upon any view of the subject, for they would go, not only to disprove the uses of particular parts of the brain, but the utility of brains at all; but in thus proving too much, they obviously prove nothing. Farther and more careful observations are necessary; in particular, attention should be directed to ascertain whether both hemispheres of the brain be alike injured, as we know that one side is able to carry on its functions independently of the other. The inadequacy of the vivisecting method being thus made manifest, we turn to consider another and more popular mode of inquiry among medical men, and that is the pathological method, or rather the study of morbid anatomy as regards the brain. The pathologist considered that by watching the effects of disease as well as injury, and awaiting the result, he would meet with a sufficient number of cases in which particular parts of the brain were diseased, and hence their functions deranged, to be able to tell, by comparing the symptoms during life with the morbid appearances after death, what relation subsisted between the several parts and the functions exercised by those parts. But here again we are met by difficulties somewhat analogous to those which we have seen beset and embarrass the mode of investigation by ablation of parts. There is perhaps a greater chance that morbid action would be set up in one particular part of the brain, and be confined thereto, than that we should light upon a single organ in our attempts to cut out parts separately, and succeed in removing that part singly, neither more nor less: but how seldom in disease have we its ravages so strictly confined, or an absence of general or sympathetic disturbance involving neighbouring or distant parts more or less. Again, it must depend on the nature of the morbid action, whether the function, even when disturbed, be exalted, diminished, or altogether suppressed; while how difficult is it to determine respecting any individual labouring under severe illness, especially disease of the brain, to what degree any of his mental or moral powers be affected beyond the information to be obtained from his giving rational answers or not, to a few common-place questions. Dr. Evanson here dwelt on the importance of morbid anatomy—no one could value pathological inquiries more than he did, nor recommend their prosecution more strenuously, even as regarded the inquiry now proposed—but Pathology, like everything else, had its proper time and place. Some light had, however, been thrown on these subjects by pathological investigation; and the continued prosecution of the inquiry, with due precaution, would doubtless add still farther to our knowledge. On reviewing, however, what had been as yet actually done by pathology in the way of connecting derangement of function with disorder of particular parts of the brain, but two points seem to have been with any certainty established; and these were the relation between loss of power of utterance and an alteration of the anterior lobules of the hemispheres, and between derangements of the generative system and alteration of one of the lobes of the cerebellum. Dr. Evanson said, he read these statements from an epitome by a French author of note, that they might not appear as statements coming merely from himself. Other relations were said to exist between affections of the extremities, upper or lower, and some of the deeper-seated parts of the brain; but these had nothing to do with the higher functions attributed to the brain, and which he was more particularly considering; while even these relations between the parts alluded to were contradictory of the results obtained by those who experimented on the same parts in living animals. As yet, then, it did not appear that much light had been thrown on the subject by pathological inquiries. The two conclusions pointed out, however, were in accordance with the result of observation made by an altogether different method, and, as far as they went, corroborated the existence and situation of the organs of language and amativeness. New facts would doubtless be thus made out, but as being in itself an adequate method for discovering the functions of the brain, Dr. Evanson altogether doubted the efficiency of mere morbid anatomy.

Another set of inquirers now entered the field, who, seeing the disadvantages of attempting to investigate the functions of the brain, by examining that organ in an unnatural or unhealthy condition, proposed to investigate it only in its healthy and natural state; and, by considering its developement, to determine its functions. Perhaps this may be denominated the physiological method; or that, which, by comparisons regarding the size of the organ in man and other animals, sought thus to determine in what man's intellectual superiority consisted. "Man has absolutely the largest brain of any animal in creation, and hence man's intellect is superior." This was a plausible dogma, and had the support of some great names, and much apparent truth; but, unfortunately for those supporting this opinion, it did not prove to be absolutely true, and so, necessarily fell to the ground. Man, in fact, has not the largest brain of all animals—the brain of the elephant and whale being larger;—hence man's superiority to these animals consisted not in the superior size of his brain:—well, said others, we see this, and give up that test; but, though man's brain be not absolutely the largest, it is surely the largest in proportion to his body—and this is the reason of his superior intelligence. But this test was less fortunate than the former; for the wren, the sparrow, the canary, and many monkeys, have been found to possess brains larger, in proportion to the size of their bodies, than man; but it has not been proved, though each may be clever enough in his way, that any of them surpass man in intelligence. This mode of comparison not answering, the brain was next compared in size to the spinal marrow, and man was said to surpass in intellect, because in him the brain exceeded the spinal marrow more than in any other animal. Sömmering, in particular, supported this opinion, but it is not tenable as matter of fact; there are exceptions, and Cuvier points out the dolphin as one.

The next mode of comparison adopted, was that of comparing the brain with the size of the bones of the face. The larger the brain was in comparison to the face, the greater would be the intellectual power; and hence the superiority of man over all other animals, and even of one man over another; because the size of the brain compared with that of the face was the largest. This sounds silly enough; and yet this is, in truth, neither more nor less than an enunciation of Camper's celebrated "Facial Angle"—one of the most popular, and apparently successful, tests of this kind that has been proposed; and which still continues in favour with many physiologists. This angle (as all know) was formed by a line drawn horizontally from the roots of the incisor teeth of the upper jaw, to the opening of the ear, which, being intersected by a line drawn perpendicularly from the same incisor teeth to the most elevated part of the forehead, constituted an angle, the capacity of which was to be taken as the measure of intellect. Now, it happened that, in this mode of

comparison, there accidentally existed an element of truth, which accounts for its apparent success in many cases. The perpendicular line, in fact, gave a rude measure of the degree of projection of the forehead, or developement of the anterior lobes of the brain, which are agreed upon by all observers, as more particularly connected with the intellectual powers. The more the forehead projected, the larger the angle would become—hence the apparent truth of the test;—but, on a closer view of the subject, it will not bear examination. The facial angle of the infant is greater than that of the man, (as 90° to 86°, according to Cuvier)—hence the infant should have superior intelligence. The facial angle of the dullest European must be greater than that of the most intelligent negro, in consequence of the greater projection of the bones of the upper jaws in the latter; so that, in truth, the power of intellect must vary, (according to the test,) in proportion as the bones of the upper jaw are prominent. Besides, the facial angle, in nearly three-fourths of the lower animals, is, according to Blumenbach, the same; yet how different are these animals in their various degrees of intelligence! But it is unnecessary to dwell upon the incompetency of methods of investigation, which took the whole brain for a single organ, and made that the organ of intellect as a single mental power, and then attempted to establish the relation between the two, by comparing the brain with something between which and the brain no necessary relation existed. Say that the brain is this organ of intellect, how can the latter be increased or diminished, by any increase or diminution in the size of the whole body, or any part, (spinal marrow, nerves, or even jaw-bones,) the brain remaining the same? Yet this is the proposition so gravely put forth. Were such methods even correct, they would be useless; for, with the exception of Camper's facial angle, none are applicable during life; and were they applicable, what information could we get, but some vague notion about the degree of intellect possessed, without the slightest attempt at information respecting any one intellectual power? Yet how numerous are these powers, and how various, not merely between the different classes of animals, but between one man and another!

A new observer now appeared in the field—a man rarely endowed with the power of observing facts and thinking for himself—a close interrogator of nature, and a strict adherent to the inductive method of investigation. Dr. Evanson said, that he need hardly add, that he alluded to the celebrated Dr. Gall. He pursued his investigations according to a method as different as it appeared to be superior, to that of his predecessors. In attempting to investigate the functions of the brain, and determine the uses of its several parts, he neither confined his inquiries respecting this viscus to a state of injury or disease; nor did he look upon it as a single organ exercising a single function; but, regarding it in its natural condition as a congeries of organs, or collection of parts, he endeavoured to determine the use or function of each, by comparing the developement of one part with that of another, in the same brain, taking size as a measure of power. This was the peculiarity of Gall's method; and it was applicable, in man, to much the greater part of the cerebral surface, the exterior of the skull being a sufficiently correct indication of its interior shape, or of the cerebral developement within. The result of these observations was, to lead him to the conclusion, that the intellectual organs, or the parts of the brain by which our intellectual powers are manifested, have their seat in the anterior lobes of the brain: the organs of the moral powers are situated in the superior parts; while the lower propensities or passions, which we share in common with the inferior animals, have their seat below and behind. Each region again was subdivided into distinct parts, constituting separate organs for the various mental and moral powers.

Prof. Evanson then summed up the general arguments, and concluded, by observing, that he was far from urging any one to give credence to the science;—on the contrary, he made an earnest appeal, particularly to the junior part of his auditors, to examine and think for themselves. It had been his object to show them that the line of investigation pursued by Dr. Gall, in endeavouring to discover the functions of the brain, was free from many objections that held against other methods; and, being in itself good, could not but lead to good results. This was a physiological, not a phrenological question—as such, he had brought it before the Section.

Dr. Simms differed from Professor Evanson. Pathology should be considered along with Phrenology, and did support it to a greater extent than mentioned by Dr. Evanson.—Dr. Mackintosh thought one proof of the truth of Phrenology had escaped Dr. Evanson; he alluded to insanity.—A member objected to the method pursued by phrenologists of examining the cranium; the brain should be the part selected, and he exhibited to the Section a dried brain, which had been preserved five years, as facilitating this method. To preserve the brain, the blood is carefully washed away, the brain is then immersed in highly rectified spirit of wine for five months, then gradually dried in cloths. The brain, though shrunk, retains its natural shape and form.—Dr. Macartney would mention a better plan of preserving the brain, since there would be less reduction of bulk. Inject it with a solution of alum, immerse, and use pyroligneous acid. He was formerly a pupil of Dr. Spurzheim, and was a believer in the doctrines of Phrenology. Since then he had altered his opinion, and was now opposed to it; for he was sure, that the superficies of the brain only was considered by Phrenology, and the most important part, the intimate structure, was neglected.

Dr. Mackintosh then addressed the Section on Cholera. He would state only facts, and show them, supported by a great number of preparations of parts taken from cholera patients, soon after their death, mostly in the second stage—collapse. He then spoke in favour of pursuing Pathology, with a view of elucidating disease; but Pathology, in combination with causes, symptoms, and treatment. He who did not pursue this method, was not a pathologist, but a mere morbid anatomist. He had dissected 300 cases of cholera, in the first year of its appearance in a malignant form; 280 of these died in the collapsed stage. It was a popular error to say, as many frequently do, that medical men know nothing of cholera. In every respect their knowledge on this subject is vast, and minute, and scientific, and practical. Their knowledge exceeds that on scarlatina, or measles, with which popular opinion thinks them well acquainted. In India, the opinion is, that in cholera there is lost balance of the circulation: it was not so; there is no rigor, and never was a rigor, which there would have been, if the Indian opinion was true. There was a giving off of serum, and every vessel, arteries as well as veins of the body, every tissue was literally injected with black blood, which freely followed the knife on dissecting. Dr. Mackintosh now presented a great number of preparations, and paintings and drawings, of the organs of the body afflicted with cholera. Many preparations were dried with the cholera blood in them, which was effected by submitting them, immediately on their removal from the body, to a stream of dry hot air, from apparatus constructed for that purpose. These accumulations were greater in some organs than others, often depending on the state of the patient's health previous to the attack—if he had bronchitis, there would be the greatest accumulation. The blood-vessels were greatly distended: in a cast of a case taken from the abdomen, which he exhibited, the abdominal aorta was one inch in diameter, vena cava three-fifths, emulgent vein eight-sixteenths. The general anatomical characters, as shown by preparations of each organ, were accumulations of blood, ecchymosis, called by the French apoplexy; thus, if occurring in the lungs—pulmonary apoplexy, petechiæ, and clots. In addition, we may mention some peculiarities in individual organs, as noticed by the lecturer. In the head, even the bones were vascular, and could not be bleached, but with great difficulty: arachtnitis rare, pia mater loaded with blood and effusion, which caused many to mistake it for arachtnitis; in the sinuses clots of blood and lymph, rendering in these cases recovery impossible. In the spinal marrow were, in sixty out of 200, deposites of bone on the theca; in the chest, pleura at first dry, as if exposed to dry air; in collapse it became unctuous; lungs very heavy, weighing 3 lb. 9 oz., to 3 lb. 11 oz.; pulmonary apoplexy frequent in consecutive fever, which fully explains the number of deaths from that fever after the cholera attack. In the abdomen, the mucous membrane ulcered and softened, not always red, sometimes even white; the liver resembled that of dram-drinkers, the gall-bladder unusually distended with black bile; then many galls in numerous cases, in only one was the duct rendered impervious by them; the kidneys were diseased, as recorded by Bright, and from the papillæ could be pressed mucus; bladder contracted. As to the blood vessels, he wished to direct the particular attention of the Section to them; he would show, by many preparations, the diseased state of their inner coat, the organization of which was completely altered, so as to render them unfit for their functions, and this disease extended throughout the whole series of vessels, until it terminated in a kind of gelatinous pulp. Would this state of the vessels have considerable influence? and how far would it be concerned in producing that state of blood, always observed in cholera—when the serum passes off, the blood becoming thick and black? Many of the French, and some English, thought the nerves in cholera, on its appearance, were comparatively not so vascular, and not much diseased otherwise; the par vagum, as it passes the subclavian artery, was enlarged like a ganglion. Even animals were seized with cholera, and presented the same morbid appearance as in the human subject.

Dr. Clanny could fully confirm all the observations of Dr Macintosh. Dr. Holland inquired, what name he would give to the affection of the bowels ushering in the cholera, and what was the nature of cholera? Dr. Macintosh, replied, watery diarrhœa; and he would have entered into the nature of the disease, if time could have been afforded him.

Dr. Carson then read a paper, 'On the motion of the Blood in the Head, and on the uses of the Ventricles and Convolutions of the Brain.'

The subject was treated in reference to three principal points:—1st. The circulation of the blood through the head. 2nd. To the evolution and regulation of the heat of the head. On the first point little was added to what had been already published by the author. On the second head, also, brain only contains an extension of that power of generating heat and reducing heat possessed by every part of the body. The 3rd point was that in which the originality of the communication chiefly consisted. It explained the contrivances which nature had used to retain all parts of the brain itself, and of its connexions within the head, in their natural position, both with respect to the parts of one hemisphere of the brain, and also in relation to each other, and to the cranium. As it was contended to be fully proved, that the substance of the brain is liable to decrease and enlargement, like any muscular or soft part of the body, in cases of great emaciation or obesity, and as the brain must always occupy the same space,—that is, it must always fill the cranium, it was necessary in these changes of dimensions to have contrivances for allowing the brain to occupy this space without laceration, undue constriction of the substances and appendages of the brain, or of changing the apposition of the different parts of the brain to their appropriate parts of the skull. These contrivances consisted of two kinds; the ventricles placed in the interior of the brain, and the convolutions on its exterior superficies. The internal ventricles, or chambers, were receptacles irregularly formed, all connected with each other, and with the spinal axis. By these receptacles containing more or less of water, according to the amount of actual brain, the existing quantity of brain was allowed to assume the condition that was fitted to retain its relations. In this office the ventricles were greatly aided by the convolutions of the brain. In consequence of this, parts of the brain of a person in full health and of the same in a state of emaciation, would be opposed to different parts of the skull. Protuberances of the brain, in one case, received into depressions on the skull, would, in the other, be opposed to protuberances of the skull, and the nerves and blood-vessels would, in the different cases, have a changed direction, and one altogether incompatible with their functions. To prevent these effects, nature has nicked the external surface of the brain. The convolutions formed by this nicking, in cases of emaciation, have wider insterstices between them, and become themselves narrower as the furrows are enlarged, while the ridges are smaller. These enlargements of the furrows co-operate with the ventricles,

in cases of great emaciation, in securing to the changed amount of brain its natural position. The different size of the furrows is formed or filled by an increased vascularity and cellularity in the vessels of the pia mater and arachnoid coat. Protuberances of the brain are received into depressions of the skull; and the nerves and blood-vessels find their road to their place of exit out of the skull unchanged. This appears to be one of the important and indispensable uses of the ventricles and convolutions of the brain.

Dr. Evanson said, in closing the Section, that no meeting could have been more harmonious; and the great advantage of these kinds of associations had been experienced, in examining and testing any opinions, and in making more generally known what was useful.

CONCLUDING OBSERVATIONS.

We have not thought it necessary to report the proceedings which took place at the final meeting on Saturday evening: these are so much matters of course, that comparatively few persons were present. The business is confined to returning thanks to the different Societies and individuals, whose attentions and kindness had placed the Association under obligations—and, assuredly, on no occasion have they been better deserved. The exertions of the Local Committee, and the cordial liberality of the citizens generally, were universally acknowledged. It may, indeed, be observed generally, that the Meeting went off remarkably well. This we attribute, in degree, to the modifications which have taken place in the character of the Evening Meetings, and to the consequent increased facility of social intercourse; and we ought, perhaps, in justice to add, to the anxious and untiring exertions of all the officers of the Association.—The total number of Members present was 1,840, being an increase of 535 over the meeting at Bristol.

One circumstance, however, deserves especial mention, and this was the presentation of a colossal bust of Mæcenas by the Chevalier Manni. It had been exhibited during the week in the Town Hall. For a sketch of its history, and the circumstances which give interest to it, and for an extract from the letter which accompanied it, we are indebted to Dr. Charles Bryce, to whom it was forwarded.

"It was long a cause of wonder and regret that no gem, medal, or statue of a man so illustrious had ever been discovered. At length the Duke of Orleans, Regent of France, early in the last century, by a happy conjecture, fixed on one of the gems in his collection, an amethyst of small size, marked with the name of the engraver, Dioscorides, as being the representation of the head of Mæcenas. Another gem, bearing the name of Solon, the engraver, evidently representing the same person, was afterwards found in the Farnesian Museum; and a third of the same, a sardonyx, also engraved by Solon, has since been discovered in the collection of the Prince Ludovisi. The features given in these gems agree so well with all that has been handed down in the Roman Classics concerning the personal appearance and habits of Mæcenas, that the suggestion of the Duke of Orleans has been adopted by all subsequent antiquaries. A few years after the recognition of the head of Mæcenas on the gems of Dioscorides and Solon, both artists coeval with Augustus, an antique fresco painting was discovered in the ruins of the palace of the Cæsars on the Palatine Hill at Rome. This painting represents Augustus surrounded by his courtiers, conferring a crown on the Persian King Phraates, an event spoken of by Horace. In the front rank of the courtiers stands one, evidently the Prime Minister in the act of speaking, whose features strongly resemble those on the gems of Mæcenas above described. Next to him is Agrippa, who is readily recognized from medals, coins, and statues of him. Horace also is found in the group. A copy of this painting was bought by Dr. Mead, and brought to England by him; and an engraving of it may be seen in Turnbull's Essay on ancient Painting.

"This was the extent of antiquarian research and acquisition concerning Mæcenas during the last preceding half century, when, in the spring of 1830, a bust was found in an excavation made by Professor Manni, at Carsoli, the ancient Carsuli, about seventy miles from Rome, on the Flaminian Way. This place is situated in what is esteemed the most beautiful and romantic district of the Roman territory, being near the cascades of the Nera, at Terni, and midway between the towns of Terni, Todi, and Spoleto.

"The bust was of colossal size, the same as that presented to the Society, of pure Parian marble, and perfect in every feature. On being cleared of its incrustation, the modelling of the work was seen to be of that masculine firmness which characterizes the style of the epoch of Augustus, excelling in what is called a broad manner—the execution that of a master—with the greatest severity and grandeur; the emaciation by age of the individual represented being faithfully preserved. The striking resemblance of the bust to the gems and picture of Mæcenas was at once recognized by the most eminent antiquaries and learned men at Rome.

"It may be interesting to state, in further confirmation of the high value which has been set upon the bust, in Italy, as also because the circumstance enhances the gift of Professor Manni, that it has been twice copied by Thorwaldsen. One copy was presented to the Grand Duke of Tuscany, and by him placed in the Hall of the Academy of Petrarch, at Arezzo, as being the presumed birth-place of Mæcenas; the other to the King of Naples, who caused it to be deposited in the Borbonico Museum at Naples."

The following is an extract from the letter of Chevalier Manni, forwarded with the bust to Dr. Bryce:—

"The town of Liverpool shall possess a third copy in marble. You will exhibit it at the Meeting of the British Association, and express my very great regret, that I shall not be able to be present, as I was last year at Bristol. You will say that the friendly civilities, received on that and on other occasions in your country, moved me to offer some tribute of my gratitude and of my respect; and to manifest these feelings, I am delighted to place in your hands this Bust of Mæcenas."

We shall now conclude with a few general observations.

For a town of its size and opulence, Liverpool cannot be said to be rich in objects of interest for the stranger. Such, however, as it contains, or as exist in its vicinity, have been liberally thrown open by their proprietors to the members of the Association. In the Museums, &c. of the Royal Institution, the attention is first directed to a series of ancient paintings, from the collection of the late Mr. Roscoe, illustrating the progress of the art. The department of Natural History is remarkable, and contains some rare specimens,—to which attention was drawn in the Zoological Section (pp. 685 and 698), —there is also a well-arranged Geological collection, particularly rich in specimens of the coal formation. —The School for the Blind must also be specified as an institution on the largest scale, and admirably managed. The manufactures executed by the pupils are (some of them) exquisite for their neatness and finish.—Besides these, we may mention the Botanic Gardens, recently removed from their old site in Mount Pleasant, in consequence of the rapid growth of the town; and the Zoological Gardens, or, in other words, Mr. Atkins's private menagerie, located and enriched by subsequent donations. The ground is agreeably varied, and the collection, which is extensive, contains, we believe, an unique specimen of the mule between the lion and the tiger.—But the most interesting and individual things in the town, are some of the manufactories. One of them, Messrs. Fawcett & Preston's Foundry and Steam Engine Manufactory, is one of the largest establishments in the world. We saw it under favourable circumstances, for the proprietors were just completing the apparatus for a steam frigate, about to be launched by the French government. A stranger is most struck by seeing iron undergoing processes with which he is only familiar as connected with wood—such as turning, planing, grooving, &c. An iron shaving, more than a yard in length, turned off as smooth and clear as if it were from a piece of wood, was a novelty which surprised most of the visitors. There are more than seven hundred workmen employed in this establishment; and though the labour is very severe, and would appear, from the number of metallic particles flying about, to be very unwholesome, we remarked that several of the operatives were very old men, and that none of them looked sickly. Contrary to the general opinion, we were assured that no difference is observed between the health of those who work in brass and those who work in iron. This is a gratifying circumstance, because brass and copper are daily coming more into use, in the manufacture of marine steam-engines, being less injured by sea water than iron. The cannon-foundry was in more active operation than we should have expected in "these piping times of peace;" but we were informed that a large supply of artillery had been recently supplied to the Dutch government. Bury & Brancker's Foundry is the great manufactory for locomotive engines. It appeared to be more economical of its power than Fawcett's, and more ingenious in its contrivances and adaptations, though the works are not on so large a scale. With these we may mention Logan's Chain-cable Manufactory. In this, the most remarkable thing is, the apparent simplicity of the contrivances. Iron bars, heated, are twisted into links over double cylinders, and each link, as formed, is cut off by powerful shears. A bar crosses the middle of every link; this is formed of cast metal, and is inserted cold, when the link is welded into the chain. A slight blow is sufficient to secure the bar, for the link contracts as it cools down from welding heat. Each chain, when finished, is subjected to a severe trial; the chain is exposed, by means of a lever working on a centre, to a strain of more than twenty tons. Repeated fractures occur; and it is not until this test has been several times applied, that the chain is marked as perfect.

Without the town, the Botanist finds a rich treat in Mr. R. Harrison's collection of Orchideous and Parasitic Plants at Aigburth;—and the Geologist will visit Leasowe's Castle (an inn), for the sake of the remains of its submarine forest. This lies near the mouth of the Mersey, on the Cheshire side. It appears like a peat-bog, over which sand had been lightly sprinkled. We found several specimens of trees nearly perfect; and it was easy to determine their species, from the distinctness with which the form of the leaf is preserved in the peat. Within the house is to be seen the carved roof of the old Star-chamber, which was brought from Westminster Hall. Nor must we forget to mention, as among the objects best worth seeing in the neighbourhood, Mr. Blundell's Statue Gallery at Ince.

A visit to

KNOWSLEY

must be treated of separately. There was no meeting of the Section of Natural History on Thursday, that the members might avail themselves of the Earl of Derby's liberality in opening his collection. The morning was not fine; but this did not prevent a large party of naturalists from joining in the excursion. Amongst others, we observed Sir Wm. Jardine, Professors Graham and Henslow, Messrs. Vigors, Macleay, Selby, Gray, Gould, &c. The whole of the extensive premises were thrown open to the inspection of the visitors. In the galleries and rooms of the mansion were a fine collection of pictures; but, as our time was limited, we could not examine them with the attention they deserved. The extensive aviary contains many fine and rare birds and beasts. Some of these animals are permitted to range the grounds of the aviary unconfined, being covered in by wire-work, extending over many rods of ground. Among the Raptores we observed several fine vultures; among which were two species of Percnopterus; also the *Vultur Angolensis* of authors, and all the British eagles. Of the smaller birds, the Insessores—a species of Lamprotornis—(never before seen alive in this country)—a group peculiar to Africa, excited, by its brilliant colouring, elegant shape, and peculiar eye, the attention of all who saw it. The large eye is perhaps the most striking part of the bird, having a deep yellow iris surrounding a small and apparently black pupil, which contrasted remarkably with its dark purple plumage. There were many other rare and beautiful species in this order, especially one of the genus Euplectes. Of the Scansores there were several fine specimens; as *Nymphicus Novæ-Hollandiæ*, the *Psittacus Novæ-Hollandiæ* of Latreille, the *Paleornis Barabaudiæ*, the *Platycercus Stanleyii* (named after the noble Earl), the *Platycercus Bauerii*; also a living specimen of the red-

killed Toucan, *Ramphastos Erythrorhyncus*. Amongst the Rasores were some red grouse—specimens of the Sand and Blackcock—which had been bred in the cage—a very rare circumstance. There were also a great variety of pigeons, and gallinaceous birds. Amongst the former was the beautiful and interesting passenger-pigeon, in great numbers, leading to the hope that it may soon become naturalized in this country. Of the Cursorial birds there were several fine specimens. Amongst the Grallatores, the Stanley crane (*Anthropoides Stanleyanus*) formed a striking object. It is a native of Africa, and has lately been brought into this country. Of the Natatores there were also numerous species. Two very fine pelicans were in close confinement, on account of the ravages they committed on the young of their colleagues, the Anatidæ, &c. Amongst the animals were several valuable species of deer and antelope; also various Marsupiata from Australia. The noble Earl accompanied the party around the aviary, and seemed to take great interest in his extensive collections.

THE SALT MINES AT NORTHWICH also attracted a good deal of attention, and a party of about eighty set off on Saturday morning to visit them. According to previous arrangement, the gentlemen who were furnished by the President of the Geological Section with the necessary tickets, assembled at the railway station at a quarter before eight o'clock, but, owing to some mismanagement, the train appropriated to the party did not start until within a quarter of nine. A little after ten, the train, after a run of 30 miles, came to a stop, and the rest of the journey, a distance of about 4 miles, was accomplished in vehicles which were in waiting for the party. On their arrival at the works, they were conveyed, in succession, to the bottom of the mine in a basket lowered by means of a windlass, four descending together, and then conducted through the various parts of the excavation. There are two beds of the rock-salt, the lower one being exclusively worked, owing to its superior quality. The floor of the mine is 336 feet below the surface, and the portion of the saline mass removed is about 40 feet in height, and extends over an area of 30 statute acres. A great number of successive strata of clay, more or less indurated, occur between the upper stratum of salt and the surface, and the two saline deposits are separated by analogous formations, the portions of these next the salt being intersected with little veins of the Sal gem, exhibiting a beautiful scarlet colour, no doubt due to the presence of a small quantity of sesqui-chloride of iron. After having traversed the whole of the excavation, which was lit up in a most magnificent manner—several thousand candles having been employed for the purpose—the visitors were regaled within this subterranean palace with a very elegant *déjeuné*. We have seldom seen a company sit down in higher spirits, or to a better entertainment; and it is scarcely necessary to say, that when the health of the proprietors—particularly of Mr. Worthington, who had conducted the party from Liverpool, and also through the mine, was given, it was drunk with the utmost enthusiasm. The entertainment being concluded, some fireworks were exhibited, which lighting up the excavation with various shades of colours, produced effects which it is no exaggeration to describe as at once grand and terrific. "God save the Queen," and, at the suggestion of Mr. Porter, a psalm, having been sung immediately beneath the shaft, the whole party ascended, and returning by the same method of conveyance, reached the railroad station in Lime Street at five o'clock. The only drawback upon the hilarity of the party, which occurred, was the upsetting of one of the vehicles employed to bring back the company to the railway. No serious damage, however, was sustained. We should not omit to mention, that while the party was below, Dr. Crook took occasion to make some geological remarks applicable to saliferous deposits, and drew attention to a peculiar appearance in several parts of the roof of the mine, from which he concluded that the salt originally solidified in globular masses, the crystallization proceeding from a centre. The temperature of the mine, which we should conjecture to be about 48°, was understood to be very equable throughout the whole year,—and not a particle of moisture was anywhere to be seen.

OUR WEEKLY GOSSIP.

Our report of the proceedings of the British Association is now brought to a close. Neither cost nor labour have been spared to make it perfect, and yet we willingly acknowledge that the public are more indebted for its completeness to the kind good-will of the officers and members, than to our own exertions,—not a single instance occurred in which a wish expressed was not obligingly complied with. That, on the whole, the Report is satisfactory, may fairly be inferred from the fact, that though a large allowance was made for an increased demand for the September Parts, it has already so far exceeded expectation, that we must immediately begin reprinting. This will enable us to correct some errors in the abstract of Col. Sykes's paper 'On the Collectorates of the Deccan,' which, as stated at the time, was copied from the Liverpool papers.

We may here record, as originating out of, though in no way connected with the Association, that an Educational meeting was held on the Monday at the Mechanic's Institute, Mr. Wyse, M.P., in the chair, and Dr. Jerrard acting as Secretary. The principal paper read, was one by Mr. Porter, contributed, we believe, by Mr. Rawson, containing a statistical account of the condition of the poorer classes in Marylebone. Mr. Wyse also gave an account of the Lyceum system in America, and Mr. Bermingham of several agricultural schools, which he had recently visited, on the continent.

The publishers are beginning to awake from their summer slumbers, and the announcements of the week are many and interesting. Mr. Bentley's alone includes Memoirs of Sir William Knighton, by Lady Knighton—of Admiral Lord de Saumarez, by Sir John Ross—of Charles Mathews, by Mrs. Mathews—of Sir Sydney Smith, by a Naval Officer—of the Colman Family—of Madame Le Brun, by herself—and of Joseph Grimaldi, by himself;—The Life and Times of Louis XIV., by Mr. James—Chelsea College and its Traditions, by the Rev. G. R. Gleig—Memoirs of the Courts of Queen Elizabeth and James I., by Bishop Goodman, now first published—Memoirs of the Court of Queen Anne—A Voyage to Tangier, and Correspondence of Pepys, now first published—A short History of Sculpture, by R. Westmacott—Excursions in the Abruzzi, &c., by the Hon. Keppel Craven—Vienna and the Austrians, by Mrs. Trollope—A Winter's Journey from Constantinople to Tehran, by J. B. Frazer—The History of the Reign of Ferdinand and Isabella of Spain, by W. H. Prescott—Travels in Austria, Russia, and Turkey, by C. B. Elliott—two novels, Scrope Daynell, and Claude Du Val, by Ainsworth—Barbary Rudge, a story of the Riots of London, 1780, by Charles Dickens (Boz)—Nell Gwynne, by Douglas Jerrold—to say nothing of minor matters, or of works heretofore announced. This, it appears to us, is sufficient in all conscience for one bookseller, in one season: it is quite as much of promise as we dare offer ty the public in one week,—otherwise, we have heard of many other forthcoming works. By the bye, letters from New York make mention of a new tragedy by Mr. Willis, which is to be speedily produced.

The first exhibition of the Royal Society of Horticulture and Agriculture, was held at the Egyptian Hall, on Thursday last, when a liberal show of fruit and flowers was displayed, and prizes delivered to the exhibitors of the most successful novelties, and growers of garden productions. We paid a visit to the show yesterday, the day after the fair—when some of the most delicate flowers had faded, and other of the specimens had been removed. Among the objects most striking to the common eye, were the dahlias, a gorgeous collection; in some specimens the florist's skill has very nearly gained a mastery over nature, who has apparently resolved not to produce a blue flower of this species. The pansies too, were enormous; we were also struck by the rich brown polyanthus colours. Among the stove plants a *Crinum amabile* was the most conspicuous, and a fine collection of *Cacti*, those curious paralytics of the vegetable creation; a white *Thunbergia*, too, with a dark eye, was new to us. Among the fruits the most remarkable rarity was an enormous *granadilla*.

DIORAMA, REGENT'S PARK,
WILL BE CLOSED on SATURDAY, October 14th.—NEW EXHIBITION, representing the Interior of the Basilica of St. Paul near Rome, before and after its destruction by Fire; and the Village of Alagna, in Piedmont, destroyed by an Avalanche. Both Pictures are painted by Le Chevalier Bouton. Open Daily from Ten till Five.

MUSIC AND THE DRAMA

DRURY LANE.
This Evening, MERRY WIVES OF WINDSOR,—previous to which 'God save the Queen' will be sung; to conclude with a New Drama, in two Acts, called THE CHILD OF THE WRECK.
Boxes, 5*s.*; Pit, 3*s.*; Gallery, 2*s.*; Upper Gallery, 1*s.* *Second Price*, Boxes, 3*s.*; Pit, 1*s.* 6*d.*; Gallery, 1*s.*; Upper Gal. 6*d.*

COVENT GARDEN.
This Evening, the Tragedy of THE BRIDAL; after which the Opera of FRA DIAVOLO.
On Monday, HAMLET; with THE MILLER AND HIS MEN.
Wednesday, a New Play, in three Acts, called THE NOVICE; after which the Musical Entertainment of BROTHER AND SISTER.
Thursday, A Tragedy.
Friday, A Play; with the last New Farce of THE SPITFIRE.
Boxes, 5*s.*; Pit, 2*s.* 6*d.*; Lower Gallery, 1*s.* 6*d.* Upper Gall. 1*s.* *Second Price*, Boxes, 2*s.* 6*d.*; Pit, 1*s.* 6*d.*; Lower Gall. 1*s.*; Upper Gall. 6*d.*

Covent Garden.—This house opened on Saturday last, under the direction of Mr. Macready. We shall not occupy our own time, or that of our readers, with speculating either upon the probable nature of his management, or the degree of success which may attend it. He put forth a sensible straightforward address, and we have no reason to suppose that he will depart from the line and rule therein laid down. We consider Mr. Macready a credit to his profession, and, therefore, most heartily wish him success. The first thing that meets the eye, and makes it stare with astonishment on entering Covent Garden this season, is its general cleanliness. How the Augean labour has been accomplished within the time we know not; but all we can say is, that the dust contractors for the parish must have made a fortune. The opening play was 'The Winter's Tale,' and the afterpiece 'A Roland for an Oliver.' Both were well cast, and, on the whole, well acted; and the audience, which was very numerous, appeared quite willing to enjoy a rational evening's entertainment, at a moderate price, without evincing the slightest impatience at the absence of animals, rope-dancers, or fireworks. A Mr. Anderson played *Florizel*, and won golden opinions for the ease and propriety of his demeanor and delivery. We do not wish to be at all personal, but it would be a desirable thing if Mr. Anderson would open a small school in the neighbourhood of the theatre, and induce the majority of his brethren to come and take lessons in the pronunciation of the English language.

Olympic.—Madame Vestris started for the season yesterday week, upon which occasion the house was full in every part. The novelties were, 'The Country Squire,' (transplanted from Covent Garden for the introduction of Mr. Farren,) a burletta by Mr. Planché, called 'A New Servant,' in which Mr. and Mrs. Keeley were presented, and kissed hands on their return from America; and another burletta, by Mr. Charles Dance, entitled 'Advice Gratis,' in which the leading performers were Mrs. Orger, Mr. Farren, and Mr. F. Matthews. The first piece was kindly welcomed as an old friend, and the more so, because the taste and liberality of the manageress had put it upon the stage with a degree of elegance which gave it quite a new face. It had the additional advantage of being selected as the vehicle for the first appearances, this season, of Madame Vestris herself, Mrs. Orger, and Mr. Charles Mathews,—all of whom were cordially greeted. Both the new pieces were successful, and the theatre has been, as we understand, well attended every night since.

Adelphi.—Nothing can, in our opinion, show more distinctly the good which would result from a classification of the entertainments at the different theatres than the constant success which attends this house and the Olympic. They are near in point of neighbourhood, but far asunder as the poles in point of style. Yet each is well managed in its way, and consequently, each is prosperous. The chief present attraction at the Adelphi, is a drama called 'Rory O'More,' founded on the novel so called, and written, like the novel, by Mr. Lover. *Rory*, that delightful "*pisant*," is enacted by Mr. Power; and we may truly say, that it is a performance which leaves nothing to be wished—it is as easy as a glove, and as simple and natural as truth. The piece itself is

extremely well written and arranged: it is replete with fun, and has just enough of the pathetic and the melo-dramatic about it to interest and to excite, without dwindling into the mawkish; and as it afforded us two hours of uninterrupted amusement, we may safely recommend it as likely to have the same effect on our readers. Mr. and Mrs. Yates, Mr. O. Smith, Mr. Wilkinson, and all the old Adelphi favourites, were warmly cheered as they successively appeared. A Miss Agnes Taylor played *Mary O'More*, and sang two ballads most charmingly. The first, called 'The Land of the West,' is the most taking; and it was given in a manner which made one doubt which to praise most—voice, time, tune, taste, or feeling. It came straight from the heart of the singer, and, by consequence, went straight to the hearts of her hearers. We most earnestly hope that nobody will induce this young lady to *improve* her style, for, if not, we shall have the best ballad singer which the town has listened to since its ears used to surrender themselves to the touching and beautiful simplicity of Miss Stephens.

SAINT JAMES'S THEATRE.—A new operatic burletta, in two acts, was *done* here (we cannot afford it any stronger expression) on Wednesday. It is entitled 'The Cornet, or Orders from Head Quarters.' As we profess ourselves advocates for the classification of theatres, we have no right to complain of the performances at this house being so curiously unlike any we have ever witnessed elsewhere; but it is our duty to report them as they are, that the incredulous may go and be convinced. The piece in question may be taken as a specimen. It is not that it is particularly good—it is not that it is particularly bad—but that it may be described as being emphatically "nothing at all." It is difficult to conceive anything so full of emptiness; and assuredly, to spread such an atom of matter over the surface of two acts, requires at least the ingenuity with which a servant at a boarding-school contrives to make an ounce of butter cover an acre of bread. We are not in the habit of detailing the plot of a piece when it has any; but, as this has *none*, we shall give it at length. The scene (which, by the bye, is the same throughout both acts,) is supposed to be the barrack-room, or rather mess-room, at an inn, of a set of officers in the Russian service; consisting of the general (a Hungarian), the colonel (a Pole), and the major (a Neapolitan). It should be observed, that this interesting variety in the birth-places of these gentlemen does not extend beyond the lines so describing them in the bills, as they all speak the same language, and wear the same uniform. Well, they drink and sing a chorus; and then the wife of a captain of the regiment arrives, disguised "as a cornet," to join it; and the general begs him to "be seated," and drink. This he does the first time, but declines the second, on the plea that he is not used to such strong wines: whereupon the major asks the new cornet if he "means to insult him," and says he must either drink or fight. The general interferes, and the major waives the duel, upon condition that the cornet sings a song; and he sings, 'For love I left my native home,' which the major declares to be insipid,—and, we must confess, we quite agree with him. They go away, and leave the cornet, to whom her maid enters, disguised as "another cornet," and they sing a duett—'We really are a pretty pair'—and they really are; and then the chambermaid sings a song, and then the cornet sits down and takes out his knitting!! and the waiter comes and catches him at it, and informs him, that "the general wants to speak to him in the stable," and he gives the waiter money not to tell about the knitting, and the two cornets and the chambermaid sing a trio; and after that, the cornet sings a song; and then all the officers come on, and bed-candles are ordered and brought, and the general desires the cornet to come to bed, which the cornet, being a lady (and seemingly for no other reason), declines, and they sing a finale, the burthen of which is 'Good night.' In the second act, the chambermaid sings a song, and the captain (husband of the cornet) makes his appearance, and makes love to her, and the cornet comes, and they sing a trio, which, from the discovery which the cornet makes of his husband's misbehaviour, may be called both a glee and a catch; and then the captain sings a polacca, and then he quarrels with the cornet, and produces pistols to fight him (of course having no guess that he is proposing to shoot his own wife); and they do not fight, and the captain goes away; and it gets dark, and the cornet sings, 'Though earth with night is shrouded'; and he and his maid (the other cornet) lie down to sleep, the one on chairs, the other on the ground; and there is an alarm of the enemy; and two shots are fired outside, and the cornets scream, and run into the corner, and the general comes, and fires two pistols with his own hand, out of the window, and into the enemy; and then he brings two little guns, and orders the cornets to fire, who do so and scream again; and the captain comes in again, wounded in the arm, and the cornet binds him up with his handkerchief; and he exclaims, "this is my wife's handkerchief"—and he is quite right, for it is so; and they all live happy afterwards inside, and the others die happy outside, we suppose, because the piece concludes with a chorus in honour of the victory. Whence the music came from, we know not, with the exception of one very old German air, which Miss Smith sings; but we may safely say, that it is as full of meaning as the piece. In short, take it for all in all, we may conclude with the expression which Lord Stewart used to the Burgher guard of Hamburgh, when he was placed in the painful position of being obliged to say something civil after reviewing them—"Gentlemen, I never saw anything like it."

Talk of liberal and spirited managers, indeed—what liberality or spirit can equal that of Mr. Braham, who, in producing such pieces as this, sacrifices a large portion of his well-earned wealth in the support of many worthy individuals of the profession to which he has so long been an ornament, without, as we should think, a prospect, or even a hope, of remuneration?

MISCELLANEA

New South Wales.—The following are the results of the last census (1836), abridged from the *Colonist*, a very able paper, published at Sydney, and obligingly forwarded to us. In the year 1820, the number of souls within the territory of New South Wales was 21,200; in 1821, it was 29,783; in 1823, it was 36,598; in 1833, it was 60,794; and in 1836, it was 77,096. The increase of the entire population in the *first* eight years, was 15,398; in the *second* eight years it was 40,498, being an increase considerably more than *double* that of the previous period. The gross increase, in the whole *sixteen* years 55,986. The population is extended over the counties in the following proportion:—

Cumberland	39,797	Macquarie	1,300
Northumberland	5,016	Gloucester	854
Durham	3,203	Hunter	803
Camden	3,161	Saint Vincent	592
Argyle	2,417	Westmoreland	579
Cook	2,052	Georgiana	575
Roxburgh	1,930	King	544
Bathurst	1,729	Wellington	530
Murray	1,728	Bligh	376
Brisbane	1,373	Phillip	247

The population of Sydney is 19,729—of Parramatta 3,600. The proportion of the sexes throughout the colony is—

Males	55,539
Females	21,557

The proportion of freemen to convicts is—

Free	49,265
Convicts	27,831

Of these, there are 54,621 Protestants; 21,898 Roman Catholics; 477 Jews; and 100 Pagans.

Tombs.—Some tombs have been discovered at Echternach in Switzerland, which are said to be anterior to the year 1000, and agree with the date of the foundation of the monastery of Echternach.

The Widower.—"As I don't rekvire any o' your conversation just now, Mum, will you have the goodness to re-tire?" inquired Mr. Weller in a grave and steady voice. "Well, Mr. Weller," said the buxom female, "I'm sure I only spoke to you out of kindness." "Very likely, Mum," replied Mr. Weller. "Samivel, show the lady out, and shut the door arter her." This hint was not lost upon the buxom female, for she at once left the room, and slammed the door behind her, upon which Mr. Weller, senior, falling back in his chair in a violent perspiration, said—"Sammy, if I wos to stop here alone vun veek—only vun veek, my boy—that 'ere 'ooman 'ud marry me by force and wiolence afore it was over." "Wot, is she so wery fond on you?" inquired Sam. "Fond," replied his father, "I can't keep her away from me. If I was locked up in a fire-proof chest with a patent Brahmin, she'd find means to get at me, Sammy." "Wot a thing it is to be so sought arter!" observed Sam, smiling. "I don't take no pride out on it, Sammy," replied Mr. Weller, poking the fire vehemently, "it's a horrid sitiwation. I'm actiwally drove out o' house and home by it. The breath was scarcely out o' your poor mother-in-law's body, ven vun old 'ooman sends me a pot o' jam, and another a pot o' jelly, and another brews a blessed large jug o' camomile-tea, vich she brings in vith her own hands." Mr. Weller paused with an aspect of intense disgust, and, looking round, added in a whisper, "They wos all widders, Sammy, all on 'em, 'cept the camomile-tea vun, as wos a single young lady o' fifty-three."—*Pickwick Papers.*

Postboys.—"Wos you ever called in," inquired Sam, "ven you wos 'prentice to a sawbones, to visit a postboy?" "I don't remember that I ever was," replied Bob Sawyer. "You never see a postboy in that 'ere hospital as you *walked* (as they says o' the ghosts), did you?" demanded Sam. "No," replied Bob Sawyer. "I don't think I ever did." "Never know'd a churchyard vere there wos a postboy's tombstone, or see a dead postboy, did you?" inquired Sam, pursuing his catechism. "No," rejoined Bob, "I never did." "No," rejoined Sam, triumphantly. "Nor never vill; and there's another thing that no man never see, and that's a dead donkey." "Well, what has that got to do with the postboys?" asked Bob Sawyer. "This here," replied Sam. "Vithout goin' so far as to assert, as some wery sensible people do, that postboys and donkeys is both immortal, wot I say is this; that venever they feels theirselves gettin' stiff and past their work, they just rides off together, vun postboy to a pair, in the usual vay; wot becomes on 'em nobody knows, but it's wery probable as they starts avay to take their pleasure in some other vorld, for there ain't a man alive as ever see either a donkey or a postboy a takin' his pleasure in this!"—*Pickwick Papers.*

ADVERTISEMENTS

ORIENTAL LITERATURE.—Professor DUNCAN FORBES will deliver his INTRODUCTORY LECTURE on THURSDAY, the 12th inst., at 3 o'clock precisely in the Afternoon. Any Gentleman presenting his card will be admitted to this Lecture.

King's College, London, H. J. ROSE, B.D., Principal.
Oct. 2, 1837.

CHEMISTRY.—Professor DANIELL, F.R.S, will COMMENCE the FIRST DIVISION of his extended COURSE of CHEMISTRY on the FORCES which CONCUR to the PRODUCTION of CHEMICAL PHENOMENA, on MONDAY, the 9th of October, at 2 o'clock, P.M., and he will continue it on each succeeding Tuesday, Thursday, Friday, and Monday, to the end.

Gentlemen who are not otherwise Students in the College, may enter to these Lectures.

King's College, London, H. J. ROSE, B.D., Principal.
Oct. 2, 1837.

UNIVERSITY COLLEGE, LONDON.—FACULTY OF ARTS.—SESSION 1837–8.

The Session will commence on MONDAY, October 16, when PROFESSOR DE MORGAN will deliver an INTRODUCTORY LECTURE, at Two o'clock precisely.

Classes:

LATIN—Professor Key, A.M.
GREEK—Professor Malden, A.M.
HEBREW—Professor Hurwitz.
ORIENTAL LANGUAGES—Professor Falconer, A.M.
ENGLISH LANGUAGE and LITERATURE—Prof. Rogers.
FRENCH LANGUAGE and LITERATURE—Professor Merlet.
ITALIAN LANGUAGE and LITERATURE—Prof. Panizzi.
GERMAN LANGUAGE—Teacher, Mr. Wittich.
MATHEMATICS—Professor De Morgan.
PHILOSOPHY OF THE MIND and LOGIC—Professor the Rev. J. Hoppus, Ph. D.
HISTORY—Professor the Rev. R. Vaughan, D.D.
ENGLISH LAW—Professor Lumley, B.C.L.
ZOOLOGY, RECENT and FOSSIL—Professor Grant, M.D.
GEOLOGY, GEOGRAPHY
STATISTICS, and POLITICAL ECONOMY } Professors not yet appointed.
CHINESE LANGUAGE

DEGREES.—Students, on presenting Certificates from the College of having completed the course of Instruction required by the University of London, will be entitled to be admitted as Candidates for the Degrees of Bachelor and Master of Arts, and Bachelor and Doctor of Laws, to be conferred by the University.

SCHOLARSHIPS.—A FLAHERTY SCHOLARSHIP, of 50*l.* per annum, tenable for Four Years, will be awarded in the course of the Year 1838 to the best proficient in Mathematics and Natural Philosophy. Students entering in October will be admitted to competition for this Scholarship, in common with those of preceding years.

A FLAHERTY SCHOLARSHIP of the same amount and duration will be awarded, in alternate years, to the best proficient in Classical Languages.

Prospectuses and further particulars may be obtained at the Office of the College.

AUGUSTUS DE MORGAN, Dean of the Faculty.
CHARLES C. ATKINSON, Secretary.
31st August, 1837.

ARTISTS' AND AMATEURS' CONVERSAZIONE, FREEMASONS' TAVERN.

THE Members of the above Society are respectfully informed that the First MEETING will take place on the FIRST WEDNESDAY in NOVEMBER, the Subscription to be paid by October 11th, before which day the names of new Candidates must be sent to the Hon. Secretary,
HENRY GRAVES, 6, Pall Mall.

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SCHOOL.—The LEASE of a well-established SCHOOL, near Southampton, TO BE DISPOSED OF, at Christmas, either with or without any part of the Furniture. The Premises extensive.—Applications (post paid) to be directed to the Rev. Mr. C., Post Office, Southampton.

EDUCATION.—TO PARENTS AND GUARDIANS.—GROVE HOUSE, BROMPTON, is NOW OPEN for YOUNG GENTLEMEN, on a plan combining the advantages of maternal care and attention, with a course of Moral, Religious, and General Instruction, preparatory to the more advanced pursuits of Classical Literature. A Parisian is resident in the house for the advantage of the Language. The Terms moderate (commencing from the time of entrance), and no Extras. Extensive grounds are attached to the house, situate in the most desirable part of Brompton.
For further particulars and references, application may be made as above; or to Mr. Hailes, Bookseller, 16s, Piccadilly. All letters by post are requested to be paid.

TO ARTISTS, TOURISTS, AND ADMIRERS OF THE FINE ARTS.

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The Company's Rates and Proposals may be had at the Office in London, or of any of the Agents in the Country, *who are authorized to report on the appearance of Lives proposed for Assurance.*
HENRY DESBOROUGH, Secretary.
2, Cornhill, 29th Sept. 1837.

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